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ANALYSIS OF INFORMATION REQUIREMENTS OF THE NOISE ABATEMENT COMMUNITY

Informatics, Incorporated

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168

TABLE OF CONTENTS

SECTION		PAGE
1	SUMMARY	1-1
2	APPROACH	2-1
3	FUNCTIONAL ACTIVITIES AND ASSOCIATED INFORMATION NEEDS	3-1
3.1	Introduction	3-1
3.2	Definitions	3-2
3.2.1	Information Products & Services	3-2
3.2.2	Noise Subject Areas	3-5
3.2.3	Functional Activities	3-8
3.3	Derivation of Information Requirements	3-17
4	INFORMATION USERS' CHARACTERISTICS	4-1
4.1	Introduction	4-1
4.2	Information Users' Characteristics	4-2
4.3	Interview Observations	4-9

TABLE OF CONTENTS (cont'd.)

SECTION PAGE

5 EXISTING NOISE INFORMATION SOURCES 5-1

5.1 Introduction 5-1

5.2 Federal Government Activities 5-2

5.2.1 Overview

5.2.2 Examples of Direct Federal Information Activities 5-3

5.2.3 National Technical Information Service 5-6

5.2.4 NASA Scientific and Technical Information Facility 5-8

5.2.5 Transportation Noise Research Information Service 5-9

5.2.6 National Industrial Pollution Control Council 5-10

5.2.7 Noise Repository Information System 5-10

5.2.8 National Referral Center for Science & Technology 5-11

5.2.9 National Clearinghouse for Mental Health Information 5-12

TABLE OF CONTENTS (cont'd.)

SECTION		PAGE
5.3	Publishers	5-12
5.4	City Level Information Activities	5-22
5.5	Professional Societies & Trade Organizations	5-25
5.5.1	General	5-25
5.5.2	Acoustical Society of America	5-26
5.5.3	Institute of Noise Control Engineering	5-30
5.5.4	Societies and Associations Interested in Otolaryngology and Speech and Hearing Problems	5-31
5.6	Private Acoustical Consultants	5-33
5.7	Academic Centers	5-34
5.8	Producers of Special Information Products	5-35
5.8.1	Short Courses	5-35
5.8.2	Films	5-37
5.9	Other Information Centers	5-38
5.10	Conclusions	5-42

TABLE OF CONTENTS (cont'd.)

SECTION		PAGE
6	INFORMATION SUPPLY AND DEMAND OVERVIEW	6-1
7	CONCLUSIONS AND RECOMMENDATIONS	7-1
7.1	Introduction	7-1
7.2	Conclusions	7-1
7.3	Recommendations	7-6
APPENDIX		
A	List of Primary Periodicals	A-1
B	List of Secondary Periodicals	B-1

SECTION 1

SUMMARY

This report provides a definition of the noise information community. An a priori model of this community was established and the information requirements were determined through an activity analysis. This conceptual model was then expanded and verified through a series of personal interviews. The highlights of our findings include: The interest of this community in noise is heterogeneous and there is no single information product or service identifiable which would satisfy all needs. There are now in existence many information services. However, the majority of information users are either not aware of these services or are unable to benefit from them. Those people whose activities have the greatest impact on the national noise climate operate with the least amount of information support. Recommendations to alleviate this situation are presented in Section Seven.

SECTION 2

APPROACH

A large body of information about noise, noise effects, and noise control exists in various forms in the United States and throughout the world. However, much of the information is not easily retrievable because it is located in a diffuse body of literature, or in other forms, difficult for most people to find. Therefore, potential users of this information are forced to make decisions and act on the basis of insufficient or incomplete data. The goal of any information system or service is to provide a useful product to potential users. Such a product should be in a form which permits easy incorporation of the data presented into the users' work. The mere existence of information sources is not enough; the sources must be identified and made available to the user who might otherwise overlook them.

Thus the rational design of information systems must be based upon the needs of the users in the performance of their activities. Information systems or services which are not designed on this basis will inevitably fail to meet the users' needs. A logical first step, then, in the analysis of the adequacy of existing systems, and in the design and implementation of new ones, is the determination of the functions and activities of the potential users. This first step allows the determination of other needs.

The present study first identified the information needs of members of the noise community (i.e., individuals and organizations which are active in noise control research and applications, in policy planning on noise-related matters, in regulation and control of noise sources, and in dissemination of noise information) and then determined the information products and services required to meet these needs.

We began with the identification of the basic functions performed by members of the noise community and used these as the basis for the identification of information needs. Functions were then associated with specific individuals or organizations, that is, with information users. Five basic functions have been isolated:

- Policy, planning, and program management;
- Research;
- Application;
- Implementation; and
- Dissemination.

These functions are defined in Section 3 of the report.

It will be seen that the dividing lines between functions are not always sharp. For example, what one person might characterize as research, another might call application. Fortunately, the dividing lines are not critical in the approach; one could portray all activities of the noise community without the arbitrary division into basic functions. However, the division is helpful in our analysis and so we have adopted the functional approach in this report.

The basic functions as identified above are quite broad. It has been necessary to break each function down into what we have called functional activities. Thus, the "research" function can be thought of as including emission and suppression research; instrumentation and measurement research; research on effects on the physical environment; psysiological, psychological, and sociological research; and legal research. The remaining functions can be similarly subdivided. (See Section 3.)

Each functional activity is performed through several steps. These steps are identified in subsequent sections. It is important to note that all of the steps are not always performed by each member associated with a given functional activity; some steps are performed implicitly or even skipped outright. However, those steps which were identified as possible components of a given functional activity have been included in the analysis.

The performance of a step requires certain information inputs. Our analysis therefore proceeds to the identification of these information needs. Twelve broad subject areas, into which noise information falls, have been identified so that information needs can be classified by subject area. In addition, thirteen general information products and services have been identified. Thus, the information needs can be classified by reference to the products and services which can provide the information in the most suitable form.

To summarize, our analysis has proceeded from the functions performed by the noise community, through information needs, to information products and services. A matrix presenting functions and functional activities in relation to information products and services is included in the report. A second matrix indicates which individuals and organizations perform particular functional activities. This second matrix is necessary because a single individual or organizational entity may perform several activities. The two matrices allow the identification of particular individuals and organizations who are users of the information services identified in the study.

The analytical framework and the identification of functions, activities, steps, information needs, and information products and services were derived originally from a theoretical model and from an examination of existing literature. A second, important, step involved interviewing members of the noise community in order to provide an external check on the completeness and correctness of the preliminary analysis. Time and resource constraints limited the number of these interviews to 24, and limited the geographical range of the interviews to locations easily accessible from Washington, D. C.

The interviews clearly demonstrated that the individuals who perform the functional activities vary widely with respect to length and level of interest in noise, access to existing information, and ability to utilize technical information. Knowledge of these characteristics was necessary to more adequately determine the most valuable products and services.

We wish to reiterate that our study approach has been to identify user needs first, and only then to proceed to an examination of information products, services, and systems which can serve these needs. This approach assures the responsiveness of new and existing information systems to the needs of the noise community.

After identifying the information requirements, we analyzed the information gathered through interviews and attempted to describe the salient characteristics of information users. In addition, we reviewed existing information services in order to determine the match or mismatch of these services with requirements. Finally, the total requirements spectrum was combined with existing services and products and conclusions were drawn as to the state of the "noise information world."

Our conclusions and recommendations are based on this review and highlight those areas in which there is a critical need for change.

SECTION 3

FUNCTIONAL ACTIVITIES AND ASSOCIATED INFORMATION NEEDS

3.1 Introduction

This Section defines the noise community. It presents, in structured format, the activities of this community and then derives the information requirements. Finally, it suggests thirteen information products and services in twelve subject areas which would satisfy these requirements.

The contents of this Section are presented in three groups: The first is this introductory note, the second contains definitions of information products and services, noise subject areas and functions, and functional activities; the third contains the derivation of information requirements.

3.2 Definitions

3.2.1 Information Products and Services

Thirteen information products and services which can serve the needs of the noise community have been identified and are listed below. Subsequent exposure may provide more detailed descriptions of the products and services, or may lead to the discovery of additional products or services.

1. State-of-the-Art Awareness Services

   Abstract bulletins, professional journals, current awareness announcements by interest profile.

2. Document Services

   Services such as technical book stores; national technical information services; specialized information services (e.g., American Institute of Aeronautics and Astronautics, Engineering Societies Library, etc.); providing documents in hard copy or micro-form.

3. Program and Budget Information Services

   Budget information, program planning data, award of contract and grants, Commerce Business Daily, Dun and Bradstreet service, program summaries.

4. Literature Search and Bibliographic Services

   Specific subject area searches of the literature -- demand or standard.

5. Legislation and Standards Reference Services

Standards, laws, codes, and ordinances dealing with noise.

6. Litigation and Enforcement Retrieval Services

Court decisions, pending litigations, and enforcement experience.

7. Data Compilations

Emission level data of selected models of noise producing equipment.

8. Newsletters

Informative news publications to members of associations, or to special interest groups.

9. Foreign Information Exchange

Collection, translation, analysis, and dissemination of foreign noise information, and dissemination of domestic information to foreign countries.

10. Information Conversion Services

Conversion of technical information into a form which is more usable to a particular, technical or non-technical audience, (i. e., legislators, government officials, medical practitioners, educators, the general public). Products include audiovisual aids, reports, brochures, hand outs and literature guides.

11. Personal Communications

Conversations at conferences, conventions, workshops, short courses; phone conversations; letters.

12. Query and Response Services

One-time answers to specific questions from legislators, government staffs, students, manufacturers, and the general public.

13. Referral Services

Identification of qualified individuals who can provide solutions to problems or who can provide specific services, based on such tools as lists of recognized experts, manufacturers or suppliers of equipment, complaint center phone numbers; bidders lists, etc.

3.2.2 Noise Subject Areas

For the purpose of this study, twelve noise subject areas have been identified. These are listed and briefly described below. However, these definitions have been prepared on *a priori* basis and will require continued re-assessment through actual application.

1. Emission and Suppression Research and Development

   Phenomenology of noise generation, transmission and suppression, including experimental data and theoretical studies.

2. Physiological Effects

   Aural and non-aural effects: e.g., hearing loss, circulatory and cardio-vascular effects, sensory perception, neural effects, etc.

3. Psychological and Sociological Effects

   Effect of noise on sleep and work patterns and other human activities; personal attitudes toward noise; effect of noise on learning, convalescence, etc.

4. Economic Effects

   Costs of noise abatement and control; costs of non-abated noise, impact on trade both domestic and foreign.

5. Building Acoustics and Noise Control

Use of construction materials and their installation, such as techniques for isolating and decoupling electrical outlets, plumbing and air flow ducts from partitions; reduction of impact and airborne noise transmission.

6. Noise Measurement

Units, instrumentation, techniques, scales, weighting networks, recording and monitoring systems, data processing systems.

7. Planning, Design and Architectural Siting

City planning, industrial plant layout and design, land use, airport and highway siting, land development, zoning.

8. Legislation, Standards, Legal Precedents

Laws, codes, zoning ordinances, statutes, standing of parties, jurisdiction of courts, court's decisions, etc.

9. Enforcement

Enforcement techniques and experience, including training, equipment costs, staffing.

10. Program, Planning and Budget

Federal, state, and local policy decisions; budget information; program status, program descriptions.

11. Noise Measurement Data

Noise emissions generated by equipment or activities; attenuation levels for particular materials, time histories, octave band analysis.

12. Educational and General

Textbooks, university curricula, general education articles, mass media coverage, popular brochures, and other popular awareness materials.

3.2.3 Functional Activities

3.2.3.1 Policy, Planning and Program Management

Policy planning and program management provide the direction and much of the funding for the other functional groups (research, application, implementation, and dissemination). It is primarily a government function occurring at the Federal, state, regional, and local levels and involves executive bodies, agencies, and offices with a responsibility for noise abatement and control. This functional group provides guidance and, in general, sets the pace of all programs.

3. 2. 3. 2. Research

This functional group is concerned with the development of a better basic understanding of noise emission, transmission and suppression; of the effects of noise on people and their activities; and of the effect of legal and governmental actions (such as laws, standards, codes, court decisions) upon noise control activities.

Emission and Suppression Research

- Develop the theory of noise production from emission sources.
- Develop the knowledge of how to suppress noise from emission sources.
- Develop the theory of attenuating materials.
- Develop mathematical models and empirical data for solving above problems

Instrumentation and Measurement

- Conduct studies to develop more accurate measurement techniques.
- Determine requirements for new instrumentation to support research.
- Develop and refine measurement scales.

Structural Components

- Determine means of suppressing air flow system and mechanical equipment noise transmission to office, apartment and other quiet areas of structures.
- Determine the effect of the interaction of building techniques and building materials to reduce between walls and between floor and ceiling noise transmission.

Physiological, Psychological and Sociological

- Determine the aural and non-aural effects of noise on human physiology.
- Determine the effects of noise on sleep and ability to perform work and other human activities.
- Determine the sociological and psychological effects of noise and proximity of noise sources (e.g. , airports, highways, industrial plants).
- Determine effects of noise on quality of life in urban and sub-urban environments.

Legal

- Survey laws, codes, statutes and ordinances applicable to noise control to determine scope, enforcement and penalties.
- Determine success of existing laws, standards and regulations.
- Monitor completed and on-going litigation to develop precedents.
- Determine the effect of conflicting building codes on noise in structures.

3. 2. 3. 3. Application

This functional group is concerned with the translation of the results of research into practical means of providing quieter products and noise reducing techniques and materials. It is concerned, as well, with the development of laws and standards designed to achieve lower noise levels.

Emission and Suppression Engineering and Development

- Develop quieter production models of noise producing devices.
- Develop suppressors for noise producing equipment.

Instrumentation Engineering and Development

- Develop instrumentation which will fill needs identified by the research and implementation group.

Structural Component Engineering and Development

- Develop building materials which will attenuate noise transmission.
- Develop architectural handbooks listing various construction techniques which will increase noise control.
- Develop guidelines for uses and installation of noise attenuating materials and components.
- Study the routing and installation of air ducts and plumbing and their effects on noise control.

Protective Device Engineering and Development

- Develop ear plugs, ear muffs and other devices to attenuate noise to levels determined by the research group.

Legislation

- Based on the guidance of the Policy, Planning and Program Management functional group, and the legal background, develop and pass legislation which will protect the public and provide guidelines for industry.

Standards

- Based on legal background, knowledge of the state-of-the-art, and needs of affected parties, set standards for allowable noise levels.

Land Use and Urban Planning

- Determine the effects of noise environment on existing and proposed land development.
- Design land use plans to allow compatible land use near noise sources.

3.2.3.4. Implementation

This functional group uses the results of the research and application functional groups to achieve a reduction in noise levels and in the effects of noise upon people and their activities; It also monitors and enforces, noise abatement programs designed to meet existing laws, standards,and regulations.

Enforcement, Monitoring and Certification

- Develop techniques to enforce laws, statutes, codes and ordinances, as required.
- Assure that existing laws, standards, etc. are obeyed.
- Conduct noise surveys to determine compliance.
- Implement and maintain certification programs for equipment when required.

Medicine

- Determine the relationship between patients' symptoms and noise exposure.
- Prescribe dB level vs. time exposure limits and/or protective devices,to stop hearing degradation and/or non-aural effects.

Structural Design

- Design structures to minimize noise transmission, both within and without the structure.
- When feasible, make recommendations to correct noisy conditions in existing structures.

Adversary Action (i. e., litigation, testimony at hearings, etc.)

- Bring suit against individuals or corporations for the purpose of testing existing laws or indicating need for other action.
- Prepare for, and appear at, public hearings held for issuance of permits, licenses, or proposed legislation and regulations.

3. 2. 3. 5. Dissemination

This functional group provides the necessary formal communication link between those who perform the various activities in the four functional groups described above. It must continually analyze and determine effective modes for conveying information to specific user groups. An additional activity, common to all dissemination functions, is the collection and screening of all relevant information, as well as analysis and organization of this information, for eventual use.

Dissemination of Public Information

- Provide information to the public to inform them about issues related to noise --such as health effects and exposure levels from various activities or installations.
- Determine effective modes for conveying the information.
- Inform the public of general remedial action and assistance available to them.

Dissemination of Information for Planners, Public Administrators, and Legislators

- Provide information (legal, technical, medical, and sociological) necessary for accomplishing planning, administrative, or legislative tasks.
- Provide information on prior court decisions

Education

- Provide information via short courses, workshops, university curricula, etc.
- Provide basic education for all other functional groups.
- Study trends of future manpower needs and adjust curricula to meet these needs.

Labeling

- Promote public awareness of noise levels of equipment which comply with the law.
- Develop a labeling scheme which assures that the noise level is readily apparent to the public.
- Advise manufacturers of methods acceptable for the determination of noise emission characteristics.

Scientific and Technical Communication

- Provide information in professional journals, association newsletters, conferences, and proceedings, abstract bulletins, current awareness services and other document services.

3.3. Derivation of Information Requirements

The approach to the development of the specific information requirements has been discussed in Section 2, Approach. The following tables contain the results of the theoretical analysis and are combined with the results of the interviews. These interviews highlighted the fact that the functional activities given here are idealized. This is to say that not all individuals associated with a given functional activity necessarily performed the same steps or performed them at the same level of sophistication. Often, this difference could be attributed to a lack of awareness of available information.

The following twenty-two tables are organized by function, each broken down by functional activity. For each such functional activity the following characteristics are aligned horizontally:

Steps
Information Needs
Information Products and Services
Noise Subject Areas

In addition, these tables can be read vertically to obtain such information as the frequency of need for a particular information product or service.

It may be noted that a number follows the listing of noise subject area. These numbers are inconsequential for the use and interpretation of the following tables and only serve as a key for subsequent overview summaries.

FUNCTION: Policy, Planning and Program Management

FUNCTIONAL ACTIVITY:

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Define area of interest (e.g. all noise, aircraft noise, construction noise, etc.)	Statutory requirements & limitations		
	Constituent interest	Information conversion services	Education & general (12)
2. Determine social, economic & environmental impact	Psychological, physiological, sociological	State-of-the-art awareness services Newsletters Foreign information exchange Information conversion services Query & response services	Physiological Effects (2) Psychological & Sociological Effects (3)
	Economic Impact	Literature Search & Bibliographic Services Newsletters Foreign Information Exchange Information Conversion Services Query & response services	Economic Effects (4)
3. Set priorities	Examine existing programs budgets, legislation	Program & budget services	Economic effects (4) Legislation, standards, legal precedents (8) Program, planning and budget (10)
	Constituent interest	Information conversion services Personal communications	Education & general (12)
4. Propose & write legislation on regulations	(Depending on level of specificity, legislation information needs may be similar to the functional activity of legislation.)		
5. Coordinate and fund research	Available technology	Literature search & bibliographic services Foreign information exchange Query & response services	Emission & suppression R&D (1) Economic Effects (4)
	Available Research Results	Literature search & bibliographic services Foreign information exchange Data compilations Query & response services	Emission & suppression R&D (1) Physiological Effects (2) Psychological & Sociological Effects (3) Economic effects (4) Building acoustics & noise control (5) Noise measurement (6) Planning, design & architectural siting (7) Noise measurement data (11)

FUNCTION: Policy, Planning and Program Management

FUNCTIONAL ACTIVITY:

Steps	Information Needs	Information Products and Services	Noise Subject Areas
5. Coordinate and fund research (cont'd)	Proposed development of technology	Program & budget information services	Emission & suppression R&D (1) Building acoustics & noise control (5) Noise measurement (11)
	Proposed research	Program & budget information services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Noise measurement (6) Planning, design & architectural siting Noise measurement data (11)
	Available funds	Program & budget information services	Program, planning & budget (10)
6. Coordinate and fund abatement and control activities	Available technology	Literature search & bibliographic services Data compilations Foreign information exchange Query & response services	Emission & suppression R&D (1) Economic effects (4)
	Available research results	Literature search & bibliographic services Data compilations Foreign information exchange Query & response services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Noise measurement (6) Planning, design & architectural siting (7) Noise measurement data (11)
	Proposed development of technology	Program & budget information services	Emission & suppression R&D (1) Noise measurement (6)
	Proposed research	Program & budget information services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3)

FUNCTION: Policy, Planning and Program Management

FUNCTIONAL ACTIVITY:

Steps	Information Needs	Information Products and Services	Noise Subject Areas
6. Coordinate and fund abatement and control activities (cont'd)			Economic effects (4)
			Building acoustics & noise control (5)
			Noise measurement (6)
			Planning, design & architectural siting (7)
			Noise measurement data (11)
	Available funds	Program & budget information services	Program, planning & budget (10)
	Experience with existing abatement & control programs	Litigation & enforcement retrieval services	Enforcement (9)
		Information conversion services	Program, planning and budget (10)
		Query & response services	

FUNCTION: Research

FUNCTIONAL ACTIVITY: Emission and Suppression Research

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor the state-of-the-art for background	Review existing & ongoing studies (emission & suppression research & application; instrumentation & measurement applicable) for: a. technical information b. investigator c. corporate source d. funding sources	State-of-the-art reviews Data compilations Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Noise measurement (6) Noise measurement data (11)
	Emission standards (existing & proposed)	Legislation & standards reference services Foreign information exchange Newsletters	Legislation, standards, legal precedents (8)
2. Research Planning a. Identify problem b. Examine budget	a. research needs b. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services Foreign information exchange	Program, planning & budget (10)
c. Design research approach	c. Existing & ongoing emission & suppression research	Document services Literature search & bibliographic services Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Noise measurement (6)
2. Research planning d. Request funding	d. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services	Program, planning & budget (10)
3. Determine the state-of-the-art in the particular area	Existing & ongoing studies (particular area)	Document services Literature search & bibliographic services Data compilations Foreign information exchange Referral services	Emission & suppression R&D (1) Noise measurement (6) Noise measurement data (11)
4. Do Research	Monitor new developments	State-of-the-Art awareness services Foreign information exchange Personal Communications	Emission & suppression R&D (1) Noise measurement (6)
5. Write Report			

FUNCTION: Research

FUNCTIONAL ACTIVITY: Instrumentation and Measurement

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor the state-of-the-art (exploratory)	Review existing & ongoing studies (instumentation & measurement research & application; emission & suppression application; structural component research & application) for: a. technical information b. investigator c. corporate source d. funding sources	State-of-the-art reviews Data compilations Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11)
	Emission standards (existing & proposed)	Legislation & standards reference services Foreign information exchange Newsletters	Legislation, standards, legal precedents (8)
2. Research planning a. Identify problem b. Examine budget	a. research needs b. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services Foreign information exchange	Program, planning & budget (10)
2. Research planning (cont'd) c. Design research approach	Existing & ongoing instrumentation & measurement research	Document services Literature search & bibliographic services Data compilations Foreign information exchange Personal communications Referral services	Noise measurement (6) Noise measurement data (11)
d. Request funding	Existing budget (present & past) (1) availability of funds (2)priorities of funding mechanism	Program & budget information services	Prgram, planning & budget (10)
3. Determine the state-of-the-art (definitive)	Existing & ongoing studies (particular area)	Document services Literature search & bibliographic services Data compilations Foreign information exchange Personal communications Referral services	Noise measurement (6) Noise measurement data (11)
4. Do research	Monitor new developments	State-of-the-Art awareness services Data compilations Foreign information exchange Personal Communications	Emission & Suppression R&D(1) Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11)
5. Write report			

FUNCTION: Research

FUNCTIONAL ACTIVITY: Structural Components

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor the state-of-the-art (exploratory)	Review existing & ongoing studies (structural component research & application; instrumentation & measurement application) for: a. technical information b. investigator c. corporate source d. funding sources	State-of-the-art awareness services Data compilations Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11)
	Emission standards (existing & proposed)	Legislation & standards reference services Foreign information exchange Newsletters	Legislation, standards, legal precedents (8)
2. Research Planning a. Identify problem b. Examine budget	a. research needs b. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services Foreign information exchange	Program, planning & budget (10)
d. Design research approach	c. Existing & ongoing structural component research	Document services Literature search & bibliographic services Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects(3) Building acoustics & noise control (5) Noise measurement (6)
2. Research Planning d. Request funding	d. Existing budget (present & past) (1) availability of funds (2) priorities of fupding mechanism	Program & budget information services	Program, planning & budget (10)
3. Determine the state-of-the-art (definitive)	Existing & ongoing studies (particular area)	Document services Literature search & bibliographic services Data compilations Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11)
4. Do Research	Monitor new developments	State-of-the-art awareness services Foreign information exchange Personal communications	Emission & suppression R&D (1) Building acoustics & noise control (5) Noise measurement (6)
5. Write Report			

FUNCTION: Research

FUNCTIONAL ACTIVITY: Psychological, Physiological and Sociological

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor the state-of-the-art (exploratory)	Review existing & ongoing studies (psychological, physiological & sociological research & application; instrumentation & measurement application for: a. technical information b. investigator c. corporate source d. funding sources	State-of-the-art awareness services Data compilations Foreign information exchange Personal communications Referral services	Physiological effects (2) Psychological & sociological effects (3) Noise measurement (6) Noise measurement data (11)
	Emission standards (existing & proposed)	Legislation & standards reference services Foreign information exchange Newsletters	Legislation, standards, legal precedents (8)
2. Research Planning a. Identify problem b. Examine budget	a. research needs b. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services Foreign information exchange	Program, planning & budget (10)
2. Research Planning c. Design research approach	Existing & ongoing psychological, physiological & sociological research	Document services Literature search & bibliographic services Data compilations Foreign information exchange Personal communications Referral services	Physiological effects (2) Psychological & sociological effects (3) Noise measurement (6) Noise measurement data (11)
d. Request funding	d. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services	Program, planning & budget (10)
3. Determine the state-of-the-art (definitive)	Existing & ongoing studies:		
	enforcement & monitoring programs	Litigation & enforcement retrieval services	Enforcement (9)
4. Do Research	adversary actions	Litigation & enforcement retrieval services	Legislation, standards, legal precedents (8)
	medical studies in the particular area	Document services Literature search & bibliographic services Data compilations Foreign information exchange Personal communications Referral services	Physiological effects (2) Psychological & sociological effects (3) Noise measurement (6) Noise measurement data (11)
4. Do Research (cont'd)	Legislation	Legislation & standards reference services	Legislation, standards, legal precedents (8)
	Identify affected parties	Litigation & enforcement retrieval services Newsletters	Legislation, standards, legal precedents (8) Enforcement (9)
5. Write Report			

FUNCTION: Research

FUNCTIONAL ACTIVITY: Legal

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor the state-of the-art (exploratory)	Existing & proposed statutes, laws & standards Technical state-of-the-art with respect to noise laws	State-of-the-art awareness services Legislation & standards reference services Newsletters Information conversion services Referral services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Noise Measurement (6) Legislation, standards, legal precedents (8) Noise measurement data (11) Education & general (12)
2. Research Planning			
a. Identify problem b. Examine budget	a. research needs b. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services Foreign information exchange	Program, planning & budget (10)
c. Design research approach	c. existing studies (techniques)	Document services Literature search & bibliographic services Litigation & enforcement retrieval services Referral services	Legislation, standards, legal precedents (8)
d. Request funding	d. existing budget (present & past) (1) availability of funds (2) priorities of funding mechanism	Program & budget information services	Program, planning & budget (10)
3. Determine the state-of-the-art (definitive)	Legal precedent (noise, environment, standing, etc.)	Litigation & enforcement retrieval services	Legislation, standards, legal precedents (8)
	Enforcement experience	Litigation & enforcement retrieval services	Enforcement (9)
	Technical state-of-the-art with respect to enforcement, monitoring & other implementation	Document services Literature search & bibliographic services Litigation & enforcement retrieval services Data compilations Newsletters Personal communications Referral services	Emission & suppression research & development (1) Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Noise measurement (6) Enforcement (9) Noise measurement data (11) Education & general (12)
4. Do Research	Current cases & statutes	Legislation & standards reference services Litigation & enforcement retrieval services	Legislation, standards, legal precedents (8)
	Existing & ongoing legal studies	Document services Literature search & bibliographic services Personal communications	
5. Write Report			

FUNCTION: Application

FUNCTIONAL ACTIVITY: Emission and Suppression Engineering and Developments

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor state-of-the-art to determine applicability to product line	Monitor existing & ongoing studies (emission & suppression research & application; instrumentation & measurement application).	State-of-the-art awareness services Newsletters Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Noise measurement (6)
2. Determine economic feasibility of & social need for reducing noise output	Existing & ongoing economic, physiological, psychological and sociological studies	Document services Literature search & bibliographic services Data compilations Foreign information exchange Information conversion services Personal communications	Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Noise measurement data (11)
3. Determine legal requirement for reducing noise output	Emission standards	Legislation & standards reference section Newsletters	Legislation, standards, legal precedents (8)
4. Examine other methods for cost/quiet considerations	Existing & ongoing technical & economic studies (particular area)	Document services Literature search & bibliographic services Foreign information exchange Information coversion services Personal communications Referral services	Emission & suppression R&D (1) Economic effects (4) Noise measurement data (11)
5. Do engineering & development	Monitor new developments	State-of-the art awareness services Newsletters Foreign information exchange Information conversion services Personal communications	Emission & suppression R&D (1) Noise measurement (6) Noise measurement data (11)

FUNCTION: Application

FUNCTIONAL ACTIVITY: Instrumentation and Measurement Engineering and Development

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor the state-of-the-art for new measurement techniques	Existing & ongoing studies (instrumentation & measurement research & application)	State-of-the-art awareness services Data compilations Foreign information exchange Information conversion services Personal communications Referral services	Noise measurement (6) Noise measurment data (11)
2. Determine market for new instrumentation	Economic studies	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications	Economic effects (4)
	Existing & ongoing studies (emission & suppression)	Document services Literature search & bibliographic services Data compilations Foreign information exchange Personal communications Referral services	Emission & suppression R&D (1) Noise measurement (11)
2. Determine market for new instrumentation	Standards	Legislation & standards reference services	Legislation, standards, legal precedents (8)
3. Do engineering & development	Monitor new developments	State-of-the-art awareness services Data compilations Foreign information exchange Information conversion services Personal communications	Emission & suppression R&D (1) Noise measurement (6) Noise measurement data (11)

FUNCTION: Application

FUNCTIONAL ACTIVITY: Structural Components Engineering and Developments

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor state-of-the-art to determine applicability to product line	Monitor existing & ongoing studies (emission & suppression research & application; instrumentation & measurement application, structural components research and application)	State-of-the-art awareness services Newsletters Data compilation Foreign information exchange Personal communications Referral services	Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11) Physiological effects (2) Psychological & sociological effects (3)
2. Determine economic feasibility of and social need for reducing noise	Existing & ongoing economic, physiological, psychological & sociological studies	Document services Literature search & bibliographic services Data compilations Foreign information exchange Information conversion services Personal communications Referral services	Economic effects (4) Noise measurement data (11)
3. Determine legal requirement for reducing noise	Emission standards	Legislation & standards reference section Newsletters	Legislation, standards, legal precedents (8)
4. Examine other methods for cost/quiet considerations	Existing & ongoing technical & economic studies (particular area)	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Referral services	Emission & suppression R&D (1) Building acoustics & noise control (5) Economic effects (4) Noise measurement data (11)
5. Do engineering & development	Monitor new developments	State-of-the-art awareness services Newsletters Foreign information exchange Information conversion services Personal communications	Emission & suppression R&D (1) Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11)

FUNCTION: Application

FUNCTIONAL ACTIVITY: Protective Device Engineering and Development

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Monitor the state-of-the-art for new protection techniques	Existing & ongoing studies (physiological research; suppression research & application)	State-of-the-art awareness services Data compilations Foreign information exchange Information conversion services Personal communications Referral services	Emission & suppression R&D (1) Physiological effects (2) Psychological and sociological effects (3) Noise measurement data (11)
2. Determine market for new devices	Economic studies	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications	Economic effects (4)
3. Will new standards require new devices?	Emission standards (existing & proposed)	Legislation & standards reference services Newsletters Information conversion services	Legislation, standards, legal precedents (8)
4. Do engineering & development	Monitor new developments	State-of-the-art awareness services Data compilations Newsletters Foreign information exchange Information conversion services Personal communications	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Legislation, standards, legal precedents (8) Noise measurement data (11)

FUNCTION: Application

FUNCTIONAL ACTIVITY: Legislation

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Determine the problem	Status of adversary actions	Litigation & enforcement retrieval services Newsletters Information conversion services Personal communications	Legislation, standards, legal precedents (Enforcement (9)
	Public pressure	Litigation & enforcement retrieval services Newsletters Information conversion services Personal communications	Legislation, standards, legal precedents (Enforcement (9) Education & general (12)
	Crisis (media)	Information conversion services	Educational & general (12)
	Administration program proposals	Information conversion services Newsletters Personal communications Query & response services	Program, planning & budget (10)
	Individual proposals	Information conversion services Personal communications	
2. Identify policy (if any)	Other legislation Administration pronouncement	Legislation & standards reference services Newsletters Information conversion services Query & response services	Legislation, standards, legal precedents (8) Program, planning & budget (10)
3. Collect possible solutions	Existing legislation (federal, state, local)	Legislation & standards reference services	Legislation, standards, legal precedents (8)
	Proposed legislation	Newsletters Information conversion services	Program, planning & budget (10)
	Results of legal, economic, physiological, psychological & sociological research (expert testimony)	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Query & response services Referral services	Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Legislation, standards, legal precedents (8)
	Legislative proposals by interest groups (public & private)	Newsletters Information conversion services Personal communications	Legislation, standards, legal precedents (8)

FUNCTION: Application

FUNCTIONAL ACTIVITY: Legislation

Steps	Information Needs	Information Products and Services	Noise Subject Areas
3. Collect possible solutions (cont'd)	Court decisions	Litigation & enforcement retrieval services	Enforcement (9)
	Technical research results	Document services Literature search & bibliographic services Data compilations Foreign information exchange Query & response services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11)
4. Hear various interests	Identify interests Expert & interest group testimony	Litigation & enforcement retrieval Newsletters Information conversion services Personal communications Referral services	Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Legislation, standards, legal precedents (8) Enforcement (9) Educational & general (12)
5. Evaluate effectiveness of solutions	Enforcement experience with laws already enacted	Litigation & enforcement retrieval services Newsletters Information conversion services Query & response services	Enforcement (9)
	Results of studies of effectiveness of enforcement	Document services Literature search & bibliographic services Litigation & enforcement retrieval services Newsletters Information conversion services Query & response	Enforcement (9)
6. Evaluate political feasibility			
7. Write legislation	Enforcement experience	Litigation & enforcement retrieval services Newsletters Information conversion services	Enforcement (9)

FUNCTION: Application

FUNCTIONAL ACTIVITY: Standards

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Determine the problem	Status of adversary action	Litigation & enforcement retrieval services Newsletters Information conversion Personal communications	Legislation, standards, legal precedents (8) Enforcement (9)
	Public pressure	Litigation & enforcement retrieval services Newsletters Information conversion services Personal communications	Legislation, standards, legal precedents (8) Enforcement (9) Education & general (12)
	Crisis (media)	Information conversion services	Educational & general (12)
	Administration & statutory requirements	Information conversion services Newsletters Personal communications Query & response	Legislation, standards, legal precedents (8) Program, planning & budget (10)
	Individual proposals	Information conversion services Personal communications	Legislation, standards, legal precedents (8) Enforcement (9) Educational & general (12)
2. Identify policy (if any)	Other legislation, policy criteria & administrative pronouncements	Program & budget information services Newsletters Legislation & standards reference services Information conversion services Query & response services	Legislation, standards, legal precedents (8) Program, planning & budget (10)
3. Collect possible solutions	Existing standards (federal, state, local) Proposed standards	Legislation & standards reference services Newsletters Information conversion services	Legislation, standards, legal precedents (8) Program, planning & budget (10)
	Results from & proposed standards of legal, economic, physiological, psychological, sociological & technical research (expert testimony)	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Query & response services Referral services	Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Legislation, standards, legal precedents (8)

FUNCTION: Application

FUNCTIONAL ACTIVITY: Standards

Steps	Information Needs	Information Products and Services	Noise Subject Areas
3. Collect possible solutions (cont'd)	Proposed standards by interest groups (private & public)	Newsletters	Legislation, standards, legal precedents
		Information conversion services	
		Personal communications	
	Court decisions	Litigation & enforcement retrieval services	Enforcement (9)
	Technical research results	Document services	Emission & suppression R&D (1)
		Literature search & bibliographic services	Physiological effects (2)
		Data compilations	Psychological & sociological effects (3)
		Foreign information exchange	Building acoustics & noise control (5)
		Query & response services	Noise measurement (6)
4. Hear various interests	Identify interests	Litigation & enforcement retrieval services	Noise measurement data (11)
	Expert & interest group testimony		Legislation, standards, legal precedents
		Newsletters	Educational & general (12)
		Information conversion services	
		Personal communications	
		Referral services	
5. Evaluate effectiveness of solutions	Enforcement experience with standards already enacted.	Litigation & enforcement retrieval services	Enforcement (9)
		Newsletters	
		Information conversion services	
		Query & response services	
	Results of studies of effectiveness of enforcement	Document services	Enforcement (9)
		Literature search & bibliographic services	
		Litigation & enforcement retrieval services	
		Newsletters	
		Information conversion services	
		Query & response services	
6. Evaluate political feasibility			
7. Write standards	Enforcement experience	Litigation & enforcement retrieval services	Enforcement (9)
		Newsletters	
		Information conversion services	

FUNCTION: Application

FUNCTIONAL ACTIVITY: Land Use Planning

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Determine problem a. Identify noise problem	a. Identify noise sources, current, & future	Document services Literature search & bibliographic services Data compilations Foreign information exchange Query & response services	Noise measurement data (11)
	Collect noise measurements (emperical or theoretical)	Data compilations	Noise measurement (6)
	Determine noise effects	Document services Literature search & bibliographic services Query & response services	Physiological effects (2) Psychological & sociological effects (3) Economic effects (4)
b. Identify alternative land uses & noise compatibility of	b. Collect information on land use compatibility	Document services Literature search & bibliographic services Data compilations Foreign information exchange Information conversion services Personal communications Query & response services	Psychological & sociological effects (3) Building acoustics & noise control (5) Planning, design & architectural siting (7)
2. Collect possible solutions	Examine existing land use planning schemes	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Query & response services	Planning, design & architectural siting (7)
	Zoning requirements (current, future)	Legislation & standards reference services Information conversion services	Legislation, standards, legal precedents (8)
	Results of sociological research	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Query & response services	Psychological & sociological effects (3)
	Existing & future laws & standards	Legislation & standards reference services Information conversion services Query & response services	Legislation, standards, legal precedents (8)
	Results of technical research	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Query & response services Referral services	Emission & suppression R&D (1) Building acoustics & noise control (5) Noise measurement (6) Noise measurement data (11)

FUNCTION. Application

FUNCTIONAL ACTIVITY: Land Use Planning

Steps	Information Needs	Information Products and Services	Noise Subject Areas
3. Hear various interests	Identify interests	Litigation & enforcement retrieval services Information conversion services Referral services	Legislation, standards, legal precedents (8) Educational & general (12)
	Expert & interest group testimony	Newsletters Information conversion services Personal communications Referral services	Legislation, standards, legal precedents (8) Educational & general (12)
4. Evaluate effectiveness of proposed solutions	Enforcement experience	Litigation & enforcement retrieval services Query & response services	Enforcement (9)
	Results of studies of effectiveness	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Query & response services	Enforcement (9)
5. Evaluate political feasibility			
6. Develop land use plan	Enforcement experience	Litigation & enforcement retrieval services Query & response service	Enforcement (9)

FUNCTION: Implementation

FUNCTIONAL ACTIVITY: Enforcement, Monitoring and Certification

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Determine where enforcement or certification may be necessary	Existing laws	Legislation & standards reference services	Legislation, standards, legal precedents (8)
	Complaints from citizens, media	Newsletters	Educational & general (12)
		Information conversion services	
		Personal communications	
	Noise measurement data (if any)	Data compilations	Noise measurement data (11)
2. Choose monitoring technique	Available monitoring techniques	Document services	Noise measurement (6)
	Experience in completed or existing monitoring or certification program (also experience with personal training)	Literature search & bibliographic services	Enforcement (9)
		Foreign information exchange	
		Information conversion services	
		Personal communications	
		Query & response services	
		Referral services	
3. Apply monitoring technique			
4. Apply existing legal sanctions (if necessary)	Existing legal sanctions	Litigation & enforcement retrieval services	Legislation, standards, legal precedents (8)

FUNCTION: Implementation

FUNCTIONAL ACTIVITY: Medicine

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Diagnose medical problem	Psychological, physiological, sociological	State-of-the-art awareness services	Physiological effects (2)
2. Identify cure or other solution	Psychological, physiological, sociological	Foreign information exchange	Psychological & sociological effects (3)
3. Evaluate possible courses of action	Psychological, physiological, sociological	Information conversion services	Legislation, standards, legal precedents (
		Personal communications	Education & general (12)
		Referral services	
4. Implement cure or other solution			

FUNCTION: Implementation

FUNCTIONAL ACTIVITY: Structural Design

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Determine primary purpose of facility (usually no noise input)			
2. Identify noise factors in design	Emission characteristics of components of facility External noise source	Document services Literature search & bibliographic services Data compilations Foreign information exchange Information conversion services Personal communications Query & response services	Emission & suppression R&D (1) Building acoustics & noise control (5) Noise measurement data (11)
	Relevant legal limits	Legislation & standards reference services	Legislation, standards, legal precedents
	Effects on internal, external environment	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Query & response services	Physiological effects (2) Psychological & sociological effects (3) Building acoustics & noise control (5)
	Existing information on architecture & design	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Query & response services	Building acoustics & noise control (5) Planning, design & architectural siting (7)
3. Identify noise reduction techniques	Noise abatement technology, architecture & design studies	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Query & response services	Emission & suppression R&D (1) Building acoustics & noise control (5) Planning, design & architectural siting (7)
4. Evaluate effectiveness of noise reduction techniques (including effect upon primary purpose)	Studies of effectiveness of abatement techniques; architecture & design	Document services Literature search & bibliographic services Foreign information exchange Information conversion services	Emission & suppression R&D (1) Planning, design & architectural siting (7) Enformcement (9)

FUNCTION: Implementation

FUNCTIONAL ACTIVITY: Structural Design

Steps	Information Needs	Information Products and Services	Noise Subject Areas
4. Evaluate effectiveness of noise reduction techniques (including effect upon primary purpose) cont'd)		Personal communications Query & response services	
	Economic factors	Document services Literature search & bibliographic services Foreign information exchange Information conversion services Personal communications Query & response services	Economic effects (4)
	Existing legal framework	Ligislation & standards reference services	Legislation, standards, legal precedents (8
5. Design to minimise noise effects while accomplishing primary purpose			

FUNCTION: Implementation

FUNCTIONAL ACTIVITY: Adversary Action

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Define complaint Identify noise problem	Noise measurement data	Data compilations Referral services	Noise measurement data (11)
	Economic effects	Newsletters Information conversion services Referral services	Economic effects (4)
	Physiological, Psychological & sociological	Newsletters Information conversion services Query & response services Referral services	Physiological effects (2) Psychological & sociological effects (3)
2. Obtain notice of hearing	Notice of hearings	Information conversion services	Educational & general (12)
3. Identify relevant legal precedents Identify relevant statutes Determine standing of parties & jurisdiction of courts from statutes & legal precedents	Legal precedents on noise (other environmental issues)	Litigation & enforcement retrieval services Information conversion services	Legislation, standards, legal precedents (8)
	Existing legislation & statutes	Legislation & standards reference services	Legislation, standards, legal precedents (8)
4. Identify lawyers specializing in noise	Legal precedents	Litigation & enforcement retrieval services Referral services	Legislation, standards, legal precedents (8)
	Civic action information	Newsletters Information conversion services Referral services	Educational & general (12)
5. Gather evidence Prepare testimony (experts)	Noise measurement data	Data compilations Query & response services Referral services	Noise measurement data (11)
	Economic effects	Document services Literature search & bibliographic services Newsletters Foreign information exchange Information conversion services Query & response services	Economic effects (4)
	Noise sources	Data compilations Query & response services Referral services	Noise measurement data (11)
	Regulations & standards	Legislation & standards reference services	Legislation, standards, legal precedents (8)

FUNCTION: Implementation

FUNCTIONAL ACTIVITY: Adversary Action

Steps	Information Needs	Information Products and Services	Noise Subject Areas
5. Gather evidence Prepare testimony (experts)	Medical effects	State-of-the-art awareness services Foreign information exchange Information conversion services Query & response services	Physiological effects (2) Psychological & sociological effects (3)
	Enforcement experience	Litigation & enforcement retrieval services	Enforcement (9)
6. Appear in court or at a hearing			

FUNCTION: Dissemination

FUNCTIONAL ACTIVITY: Dissemination of Public Information

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Identify goal & needs Identify audience	Affected parties (beneficiaries)		
2. Select, analyze & rework information for particular audience/ goal Identify possible modes of presentation	Original information	State-of-the-art awareness services Document services Literature search & bibliographic services Data compilations Newsletters Foreign information exchange Information conversion services Personal communications Query & response services Referral services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Noise measurement (6) Planning, design & architectural siting (7) Legislation, standards, legal precedents (8) Enforcement (9) Program, planning & budget (10) Noise measurement data (11) Educational & general (12)
	Studies of presentation modes	Document services Literature search & bibliographic services Referral services	Educational & general (12)
3. Present results	Use existing communication channels Develop new communication channels	Document services Legislation & standard reference services Data compilations Information conversion services Query & response services Referral services	

FUNCTION: Dissemination

FUNCTIONAL ACTIVITY: Dissemination of Information for Planners, Public Administrators, and Legislators

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Identify goal & needs Identify audience	Affected parties (beneficiaries)		
2. Select, analyze, rework information for particular audience/goal Identify possible modes of presentation	Original information	State-of-the-art awareness services Document services Literature search & bibliographic services Data compilations Newsletters Foreign information exchange Information conversion services Personal communications Query & response services Referral services	Emission & suppression R&D (1) Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Noise measurement (6) Planning, design & architectural siting (7) Legislation, standards, legal precedents (8) Enforcement (9) Program, planning & budget (10) Noise measurement data (11) Educational & general (12)
	Studies of presentation modes	Document services Literature search & bibliographic search Referral services	Educational & general (12)
3. Present results	Use existing communication channels Develop new communication channels	Document services Legislation & standard, reference services Data compilations Information convertion services Query & response services Referral services	

FUNCTION: Dissemination

FUNCTIONAL ACTIVITY: Education

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Identify goals and needs. Identify audience.	Affected parties (beneficiaries)		
2. Identify, analyze and rework information for particular audience/goal. Identify possible modes of presentation.	Original information	State-of-the-art awareness services Document services Literature search & bibliographic services Data compilations Newsletters Foreign information exchange Information conversion services Personal communications Query & response services Referral services	Emission & suppression research & development (1) Psychological effects (2) Psychological & sociological effects (3) Economic Effects (4) Building acoustics & noise control (5) Noise measurement (6) Planning, design & architectural siting (7) Legislation, standards, legal precedents (8) Enforcement (9) Program, planning & budget (10) Noise measurement data (11) Educational & general (12)
	Studies of presentation modes	Document services Literature search & bibliographic services	Educational & general (12)
3. Design curricula.	Examine other curricula Studies of effectiveness of related curricula	Newsletters Information conversion services Personal communications Query & response services Referral services	Educational & general (12)

FUNCTION: Dissemination

FUNCTIONAL ACTIVITY: Labeling

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Identify products which emit noise Identify products which claim to reduce noise	Emission characteristics of products Measuring techniques	Data compilations Foreign information exchange Information conversion services Query & response services	Emission & suppression R&D (1) Noise measurement (6) Noise measurement data (11)
2. Determine whether noise from a particular product is capable of adversely affecting public health & welfare	Psychological, physiological & sociological	Document services Literature search & bibliographic services Data compilations Foreign information exchange Information conversion services Query & response services	Physiological effects (2) Psychological & sociological effects (3)
3. Determine form of notice, methods & units of measurement to be used	Previous experience Existing legislation & standards	Legislation & standards reference services Information conversion services	Legislation, standards, legal precedents (8)
4. Maintain records of compliance with labeling requirements			

FUNCTION: Dissemination

FUNCTIONAL ACTIVITY: Scientific and Technical Communications

Steps	Information Needs	Information Products and Services	Noise Subject Areas
1. Identify goal and needs. Identify audience.	Affected parties (beneficiaries)		
2. Rework information for particular audience/goal. Identify possible modes of presentation.	Original information	Document services Program & budget services Literature search & bibliographic services Legislation & standards reference services Litigation & enforcement retrieval services Data compilations Foreign information exchange Personal communications Query & response services	Emission & suppression research & development (1) Physiological effects (2) Psychological & sociological effects (3) Economic effects (4) Building acoustics & noise control (5) Noise measurement (6) Planning, design & architectural siting (7) Legislation, standards & legal precedents (8 Enforcement (9) Program, planning & budget (10) Noise measurement data (11) Educational & general (12)
	Studies of presentation modes.	Document services Literature search & bibliographic services	Educational & general (12)
3. Present results.	Use existing communication channels Develop new communication channels	State-of-the-art awareness services Document services Legislation & standard reference services Data compilations Information conversion services Query & response services Referral services	

SECTION 4

INFORMATION USERS' CHARACTERISTICS

4.1 Introduction

The noise information community has been described in structured format in the preceeding section. Although the results of interviews were incorporated in the definition of information needs these data could not possibly reflect the complete spectrum of characteristics of the information users.

The following material is presented in two sub-sections: 4.2 Information Users' Characteristics, a parametric display of characteristics identifying commonalities and differences; and 4.3 narrative account of the interview findings. We have followed the same structural format of functional activities discussed earlier in order to facilitate cross-comparisons.

4.2 Information Users' Characteristics

Policy, Planning and Program Management

- Significant or full-time interest in noise
- Continuing interest in noise
- Generally have libraries and/or information support available
- Can utilize technical information
- Needs both archival and current information

Research

Emission and Suppression

Instrumentation and Measurement

Structural Components

Physiological, Psychological, and Sociological

- Significant or full-time interest in noise
- Continuing interest in noise
- Generally have libraries and/or information support available
- Can utilize technical information
- Needs both archival and current information

Research

Legal

- Ad hoc or part-time interest in noise
- Almost always a short duration interest in noise
- Must have libraries and/or other information support available
- Generally cannot utilize technical information (except legal) unless interpreted
- Needs archival and current information

Application

Emission and Suppression Engineering and Development

Instrumentation and Measurement Engineering and Development

Structural Components Engineering and Development

Protective Device Engineering and Development

- Significant or full-time interest in noise
- Continuing interest in noise
- Generally have libraries and/or information support available
- Can utilize technical information
- Needs latest information available

Application

Legislation

Standards

- Ad hoc or part-time interest in noise
- Often, but not always, a short duration interest in noise
- Often do not have libraries and/or information support available
- Generally cannot utilize technical information unless interpreted
- Needs latest information available

Application

Land Use and Urban Planning

- Generally a part time interest in noise
- Continuing interest in noise
- Depending on affiliation, may have libraries and/or information systems available
- Generally cannot utilize technical information unless interpreted
- Needs latest information available

Implementation

Enforcement, Monitoring and Certification

- Generally a part-time interest in noise
- Continuing interest in noise
- Often do not have libraries and/or information systems available
- Generally cannot utilize technical information unless interpreted
- Needs latest information available

Implementation

Medicine

Structural Design

- Generally a part-time interest in noise
- Continuing interest in noise
- Often do not have libraries and/or information systems available
- Generally can utilize technical information
- Needs latest information available

Implementation

Adversary Action

- Ad hoc or part-time interest in noise
- Often, but not always, a short duration interest in noise
- Do not have libraries and/or information support available
- Cannot utilize technical information unless interpreted
- Needs archival and current information

Dissemination

Dissemination of Public Information

- Interest in noise ranges from ad hoc to full-time, depending upon which other functional activities performed
- Duration of interest could be short or continuing depending upon which other functional activities performed
- Often do not have libraries and/or information support available
- Generally cannot utilize technical information unless interpreted
- Needs archival and current information

Dissemination

Dissemination of Information for Planners, Public Administrators, and Legislators

- Depends on other function activities performed

Dissemination

Education

- Significant or full-time interest in noise
- Continuing interest in noise
- Generally have libraries and/or information support available
- Can utilize technical information
- Needs both archival and current information

Dissemination

Labeling

- Interest in noise ranges from ad hoc to full-time, depending upon which other functional activities performed
- Continuing interest in noise
- Amount of library and/or information support depends upon which other functional activities performed
- Abilities to utilize technical information depends upon which other functional activities performed
- Needs current information

Dissemination

STI Communication

- Interest in noise varies from part-time to full-time depending on scope of audience
- Continuing or ad hoc interest in noise
- Must have libraries and/or information support available
- Can utilize technical information
- Needs archival and current information

4.3 Interview Observations

This section discusses the similarities and differences of individuals performing various functional activities. Particular problems highlighted by the interviewees are discussed and possible solutions are presented.

4.3.1 Research

Emission and Suppression

Instrumentation and Measurement

Structural Components

Physiological, Psychological, and Sociological

Individuals associated with these functional activities tend to be the most knowledgeable in the noise community. The closer they are to the Federal government (both in terms of geography and working relations) the more their information needs are filled on a personal communication basis. Members of this group often know, on a first name basis, the individuals both funding and directing research programs, as well as those actually performing the work. Their knowledge of the state-of-the-art is quite high.

Because of the nature of their education and experience, individuals performing research are well versed in using the library research services available to them. They can easily utilize a literature search or a bibliography and document services to obtain the indicated volumes. As one interviewee indicated, he prefers references to technical reports rather than digested or re-formatted information in order to be able to retrace all elements of the original investigation. In this manner he will be able to pass personal judgement on the quality of the work reviewed.

For individuals performing research who are farther from the Federal government and the few major centers of acoustical research, keeping abreast of the state-of-the-art is more difficult. This is especially true in the area of program and budget information. One interviewee was most anxious to have information in this area. He mentioned that his only source of program and budget information is the CBD. By the time he receives it, it is often too late to assemble a proposal.

If laboratories had some advance knowledge of government and industry needs and program plans they could more efficiently utilize their staffs and facilities, and undoubtedly submit more meaningful proposals.

One of the best means of keeping abreast of the state-of-the-art is to attend conferences and professional society meetings. However, these are expensive and smaller laboratories and universities often cannot afford to send staff members to these meetings. If they are not society members, the costs are usually higher, even if they are aware in advance of the meetings or conferences. In all cases, members of this group are not able to stay aware of all current and pertinent information, even if they are located in the Washington, D. C. area, unless a formalized current awareness service is available.

Another area which demands examination is that of laws and standards. The National Bureau of Standards has compiled all relevant ANSI, ISO, ASTM, etc., noise standards. These fill looseleaf binders which cover about two feet of shelf space. These standards are copyrighted and cost several dollars each. Smaller laboratories and universities often cannot afford this cost.

A partial solution would be to abstract these standards. In this way those who need them would at least know which standards apply to them and, more importantly, could then purchase only those they really need.

Obtaining state laws can also be expensive, assuming one knows where to find them. One interviewee indicated that he spends two to three thousand dollars a year trying to keep abreast of current and pending state laws relating to noise.

Finally, one interviewee close to the Federal Government indicated that his information needs extended beyond the range of research. In particular, he felt that it was critical for him to know of progress made in the application and implementation areas. He indicated that this information was important to him so that he could provide better research support to these groups.

4.3.2 Research

Legal Research

Individuals performing this functional activity tend to vary greatly in their scope of interest. They range from the meager staff of a city councilman to the individual writing a book, or treatise.

It should be noted that, in the above examples, the output which will have the most tangible effect on the noise climate tends to be produced with the least amount of legal research support.

Interview experience with one state legal research staff indicated that they did not like a proposed bill with dB levels as it was "too technical". (Legal researchers tend to be lawyers, not scientists). The hope was that the legislature would pass enabling legislation and let some other branch of the state government set the standards.

Because of the pressure on the research staff when the legislature is in session, little time is available to do proper research. For this reason,and the lack of technical experts, several legislators did their own research using volunteer students. The reference staff simply put the bills in appropriate form. These bills were adaptations of H. R. 11021 and the Chicago bill.

4.3.3 Application

Emission and Suppression Engineering and Development

Instrumentation and Measurement Engineering and Development

Structural Components Engineering and Development

Protective Device Engineering and Development

A pattern similar to that of the first four functional activities of the research group has been observed here. Some of the larger companies (IBM, G. E., Pratt & Whitney, Ingersoll -Rand, etc.) have their own, or are affiliated with, acoustic research and testing laboratories whose staff members are well known in noise circles.

Some manufacturers do not have their own or affiliated research facilities and must depend on the results of the other researchers.

In addition, many manufacturers are just becoming aware of the need for noise information.

As the products of all these manufacturers have a real effect on the noise environment of this country, information properly applied can do much to control this environment.

A campaign to inform them of the social desirability, legal requirement, and technological feasibility of producing quieter products, as well as the source of this information, could easily be mounted using existing, well-utilized trade journals and other manufacturers' association periodicals.

Once this awareness is hightened, periodical literature totally dedicated to noise will become equally meaningful, useful, and necessary to all individuals performing these functional activities.

Manufacturers of noise-emitting products must have current information for use in two areas: (1) engineering and product development, and (2) marketing. It is the latter category which sets this group apart from the research community.

4.3.4 Application:

Legislation

Standards

Individuals performing these functional activities at the state and local level have unique characteristics.

- They must concern themselves with a variety of unrelated subjects. They can not afford the time to attain an in-depth understanding of each subject requiring legislation.
- They usually serve as legislators in addition to regular jobs. This restricts the amount of time available to study background information and guide bills through their legislatures.
- They usually have very limited staff support, generally of a non-technical nature, and often themselves do not have technical backgrounds. They generally have small budgets for information acquisition.
- If they pass a realistic, enforceable law, their community and the general noise climate benefits. If an unreasonable or unenforceable law is passed (due to lack of information, for example) it is likely to be worse than no law.
- Noise control is usually a new field for them. Hence, they may not be aware of available literature, information products, and services.

- Legislators have a short term interest in noise. Hence, they are unlikely to read periodicals solely or primarily dedicated to this subject.

- At the state level, the Council of State Governments provides an effective channel for current awareness information. As this service is paid for by appropriations from all states, and generally read by state legislators, it could be an effective channel for making legislators aware of pertinent information. (One interviewee became aware of the Federal noise bill from this service).

A single, all-inclusive and well-known noise information source which can respond quickly, and at an appropriate technical level, to their queries is of prime importance. These responses might take the following form:

- Appropriations required for various types of bills (with or without dB levels) in terms of staff salaries equipment and training;

- Referral to qualified witnesses, acousticians, noise level meter manufacturers, etc.;

- Lists of equipment which should be covered by a law and appropriate dB levels for them;

- Lists of lobby groups providing technical assistance;

- Lists of model ordinances and building codes;

- Definition of the costs to industry for various dB levels;

Finally, because of short duration interest, usually low technical background, lack of staff support, and small amount of time to spend on self-education, it will be necessary to provide some consultant-type support to legislators if meaningful, enforceable laws are to be passed. This could come from lobbyists, EPA regional office staff, or ASA or INCE public service committees.

4.3.5 Application

Land Use Planning

Members of this group are concerned with noise matters on a continuing but relatively minor basis. Land use planning has to cope with so many variables, including local political and economic issues, that noise as a land use parameter is frequently not considered during the planning stage.

The land use planner's formal training, generally speaking, has given him a basic appreciation of the environmental noise problem. His needs thus focus on new techniques, special case solutions (such as contour siting of a highway interchanges), and emission levels of noise sources (current and forecast). Unless he is affiliated with a mjaor institution such as a university, his library support is probably inadequate.

He would prefer finding answers to his questions in a single source providing information quickly, in a language he can understand. He is likely to read a number of periodicals, but most of them contain little information on noise.

4.3.6 Implementation:

Enforcement, Monitoring, and Certification

Individuals performing this functional activity generally do so in conjunction with other activities. They may be regular members of a highway patrol or city police force, or part of a county Industrial Hygiene department. Their usual tasks may be as far removed from noise control as traffic control, or as close as industrial noise control.

Their technical background can vary widely. Their information support will generally be that of the organization they are affiliated with.

One interviewee commented that he was sure that someone in his department received literature about noise, but he never saw any. Yet, he was responsible for industrial and occupational noise measurement, and would probably have to enforce and monitor his city's pending noise law.

For this reason, awareness of noise information sources must be advertised in periodicals which will be read by the variety of individuals who must deal with noise. In this manner, the individual can get his own copy of relevant literature so that he will be the "someone" in his office who reads the literature.

Another interviewee's comment was that instrumentation was available as it was used for industrial noise measurement. However, there was little operator training available and little understanding of noise. This lack of training, combined with lack of knowledge of measurement techniques, was his most pressing information need.

4.3.7 Implementation

Medicine

The medical practitioner in the eye, ear, nose and throat area is very descriptive of individuals performing this functional activity. As his title suggests, noise is again only one of several topics of interest, making demands on the time he has allotted for information acquisition and assimilation.

His medical training will have made him aware of the physical structure of the ear and the results of exposure to prolonged noise.

One interviewee indicated that information of interest to him should be of the type which could be directly applied to his practice. Research papers would be of no interest to him.

Another was unaware of the OSHA standard or the recourse that an effected worker might have in the case of job-related hearing loss. He was very interested in being informed about any laws which would set limits on the amount of noise to which people may be exposed.

A third expressed a strong desire to have hand-out type literature about noise for distribution to patients. The only such piece he had seen was published about a year ago by a professional society.

SECTION 5

EXISTING NOISE INFORMATION RESOURCES

5.1 Introduction

This section describes institutions and organizations offering information services and products. It is not exhaustive because of space limitations and because some organizational types have been treated in ONAC's NTID300.9, "Noise Programs of Professional/ Industrial Organizations, Universities, and Colleges," and NTID300.10, "Summary of Noise Programs in the Federal Government."

The number of resources available is increasing rapidly. Descriptions cover only currently offered services, with a few exceptions where a planned service is likely to be operative by a fixed date.

Important elements are treated organization by organization, but where many groups are partially active in a similar activity--e.g., short courses--they are treated together in a subsection organized around that function. Hence, some organizations may be mentioned in several places in the section. Organization of subsections is as follows:

5.2 Federal government activities
5.3 Publishers
5.4 City-level information activities
5.5 Professional societies and trade associations
5.6 Private acoustical consultants
5.7 Academic centers
5.8 Producers of special information products
5.9 Other information centers
5.10 Conclusions

5.2 Federal Government Activities

5.2.1 Overview

The EPA document NTID300.10 summarizes non-EPA noise programs in the Federal Government. Therefore this section will refer to NTID300.10 and describe programs with respect to their information dissemination aspects only. Several key information activities will be described in detail.

The basic thrust of Federal programs presently seems to be the development of research for policy and programming purposes. Only a small portion of operating budgets are devoted directly to information dissemination programs.

Indirect information effects of Federal programs are more significant. First, many research reports are cleared for public disemination through NTIS or GPO. Second financial support given by Federal departments to organizations outside the government helps make their informational activities possible.

For example, activities of the Johns Hopkins Information Center for Hearing, Speech, and Disorders of Human Communication (discussed elsewhere) are supported by a HEW grant. The American Speech and Hearing Association conference on "Noise as a Public Health Hazard" in 1968 was likewise supported by HEW, producing two information products: personal communications and exchange of state-of-the-art information between specialists at the conference, and a later ASHA Report that disseminated the information to a wider group of specialists and the general public.

5.2.2 Examples of Direct Federal Informational Activities

- Department of the Army, Army Environmental Hygiene Agency and the Environmental Health Engineering Services, Office of the Surgeon General has a hearing conservation program, described in the publication TB Med 251, that includes education of personnel to be aware of noise and conservation of-hearing problems. It is also compiling a data base on noise characteristics of equipment. This data base, the Noise Repository Information System, is discussed below.
- HEW has an in-house employee information program on hearing protection. Also, the Scientific Reference Service of NIOSH in HEW provides brief answers to technical questions on occupational hazards, including noise, to the public at no charge, except for extensive literature searches. NIOSH also plans to let contracts in FY 72 for preparation of two guidebooks on industrial noise control, one listing existing information materials and the other offering basic principles of noise control together with case histories of implementation and effectiveness.

Another operation within HEW, the National Clearinghouse for Mental Health Information (NCHMHI) is discussed in detail later in this section.

- The Department of Housing and Urban Development (HUD) has published or is planning to publish a series of educational materials, both for its field personnel and for the general public, explaining its recent Circular 1390.2 on HUD's screening of housing sites for noise exposure and assisting in implementation of requirements of Circular 1390.2. These include technical support documents and training materials with a demonstration tape recording. The Metropolitan Aircraft Noise Abatement Policy Studies commissioned by HUD will be followed up by a study intended to make the information gathered more useful to local officials concerned with airport noise. Another project planned for FY 72 is publication of a practical reference handbook on community noise for use by HUD personnel, planners, civic officials, developers and builders.

- The Department of Transportation (DOT) has transferred responsibility for information services for transportation noise to a contractor: the Highway Research Board of the National Academy of Sciences. The original goal was to provide four interrelated services: advisory committee for information systems requirements, a Transportation Noise Research Information Service (TNRIS), synthesis documents on high-priority topics and an advisory committee for future research recommendations. The TNRIS has begun publishing Transportation Noise Bulletin, discussed in detail below. Query-and-response services were originally also planned for TNRIS but have not yet been announced. Synthesis documents are in the process of preparation.

  Within DOT, FAA's Office of Environmental Quality is producing Noise Exposure Forecasts for civil aviation airports. These NEFs will be available from FAA Airport Regional Offices. However, HUD has stated that they have not been available to HUD except on a cost-reimbursement basis.

  DOT, in cooperation with the Society of Automotive Engineers (SAE) has sponsored several conferences ("Aircraft and the Environment," 1971; "Transportation and Environment" in conjunction with TRANSPO, 1972), and supported analysis and reporting of their proceedings.

- Within the Department of Commerce, the National Industrial Pollution Control Council (discussed below) has produced and published industry-by-industry reports on pollution problems, including noise. The National Technical Information Service (NTIS--discussed in detail below) serves as a principal clearinghouse for sale of Federal documents.

The National Bureau of Standards, acting as a contractor, has produced information for other Federal Agencies. Some of its products, such as a book for HEW summarizing experimental findings on the properties of normal human sensory organs, are designed for wider dissemination. Another such product, tentatively entitled "A Design Guide for Protection Against Environmental Noise," will be a digest converting European information and data "in a manner so as to be easily understood by architects and urban planners."

- General Services Administration (GSA) has published experimental procurement specifications to require quieter products. Hand tools such as grinders and pneumatic impact wrenches have been covered; lawn mowers will soon be covered.
- Within the Department of the Interior, the Bureau of Mines has instituted a training program for inspectors who will survey noise conditions in mines. However, this information program is less related to the EPA mission than others because it concerns occupational noise and provides only internal dissemination of information.
- NASA not only performs research, but maintains an information facility (discussed in detail below) that disseminates information from the worldwide literature pertaining to its mission, including information on noise.
- The Library of Congress maintains a National Referral Center (discussed in detail below) which covers noise information referrals. Within the Library, the Congressional Research Service has several staff specialists who devote part of their time to synthesizing information on noise, both for Congressional requests and constituent requests relayed by members of Congress. The CRS has recently produced documents on noise legislation before Congress, the aircraft retrofit question, and a noise bibliography, all available by request to the public without charge. The CRS also has an in-house current literature search and announcement capacity that covers new Library acquisitions, including noise-related publications. This computer-based system provides SDI-type (Special dissemination of information) announcements tailored to user-interest profiles; however, only Library staff members are qualified users of the system.

Certain of the Federal activities mentioned above merit discussion in greater detail because of their capacity to disseminate information on noise. Their operational parameters are described below.

5.2.3 National Technical Information Service

Springfield, Virginia 22151
Parent Organization: U. S. Department of Commerce

State-of-the-art awareness, document, and literature search services to facilitate access to Federal publications and data files; includes business and economic data as well as scientific and technical report literature. The system is currently acquiring documents at a rate of 50,000 per year. It is a unique, inexpensive, and powerful tool, available to all, for learning about and purchasing important documents related to noise.

- Government Reports Announcements (GRA) and Government Reports Index (GRI), each published 24/year, are indexing and abstracting journals available to the public. The combined subscription cost is $97.00. Each issue of GRA contains over 2,000 citations with indicative abstracts or references to abstracts. Abstracts are arranged in 22 subject fields, but are best accessed through the companion issue of GRI. GRA/GRI covers final and draft Environmental Impact Statements.
- Document Services: Copies of most documents listed in GRA/GRI may be purchased directly from NTIS, most of them in either hard copy or microfiche. Prices in the past have been fixed at a flat 95 cents for microfiche and $3.00 for hard copy of recent reports under 300 pp., but more variable pricing for hard copy is now being introduced. If the purchaser has a deposit account set up, delivery time is in the week-to-10-day range for items in stock. Most items are in stock.

- Other periodic NTIS publications access the same data base. The weekly Environmental Pollution and Control Abstracts publishes selected abstracts in air, water, noise, and solid waste pollution topics. It is one of 36 subject areas covered in the GRTA (Government Reports Topical Announcements) series. Cost: $5 /year for any one subject area.

  There are usually from one to five documents related to noise cited in each issue, making it a lesser-cost method of learning about most of the noise-related documents recently acquired by the NTIS system.

- FAST Announcements: ($5/year, irregular) serve as flash sheets to focus attention on selected new reports in 57 subject categories, including acoustics, transportation, engineering and construction, sanitation and pollution, and heating, ventilating, air conditioning and plumbing. Only about 10% of incoming documents are selected in each category for FAST announcement. Any or all categories are available for the basic $5 /year fee. The lack of a specific "noise" category in FAST makes it less useful as a tool for noise information retrieval than the other NTIS options.

- Retrospective literature search of all 200,000 documents held by NTIS is available through NTIS search at $25.00 for a maximum of 100 citations with abstracts. A search can be ordered by telephone and mailed within one week. If properly made, it will retrieve both NASA and other documents not only for those documents for which "noise" is a main index term, but also those for which "noise" is a secondary term. A broadly-defined NTIS search retrieved 100+ citations related to noise, including Environmental Impact Statements, for the 1970-71 period.

5.2.4 NASA Scientific and Technical Information Facility

5001 Calvert Road, College Park, Maryland 20740

This facility is contractor-operated for NASA. It has a large acquisition program, including foreign exchange agreements. Descriptive and subject cataloging information about each document is input to a machine based system. Its data base contains all types of information related to aerospace science and hence, contains noise pollution information particularly related to aircraft, aircraft engines, and other transportation-related devices.

- The large data base is manipulated to produce announcement journals, literature searches, special reports, listings and indexes. The NASA search performed for Informatics in August 1971 covered the period 1965 to date-of-search and produced 1,859 citations related to noise abatement and control, (electronics, electromagnetic and radio noise were excluded from the search). The citations covered both domestic and foreign report and non-report literature. The facility also produces and distributes microfiche of documents to qualified requestors (in general, NASA and its contractors). However, many documents from the system that are cleared for public dissemination may obtained by the wider user community through NTIS.
- State-of-the-art awareness services are divided between two abstracting and indexing journals. STAR, published by the NASA Facility, covers current worldwide report literature. By arrangement between NASA and the American Institute of Aeronautics and Astronautics (AIAA), the AIAA publication International Aerospace Abstracts covers the non-report literature, including journals, books, and conference papers. Both STAR and IAA appear 24 times per year, and both are categorized and abstracted in basically identical ways by terms from a common NASA Thesaurus.

Subscriptions are available to the public at the following rates:

	Cumulative annual index issues	Semi-monthly issues
STAR	$23	$ 54.
IAA	75	110.

Elapsed processing time is relatively short compared to some other indexing and abstracting periodicals, so the material incorporated can be quite timely.

5.2.5 Transportation Noise Research Information Service

2101 Constitution Ave. N.W., Washington, D. C. 20418

Parent organization: Highway Research Board, National Academy of Sciences

- Publishes: Transportation Noise Bulletin. 2/year. State-of-the-art information in the form of indicative abstracts of reports and papers on all aspects of transportation noise, including effects on man. Also short summaries of ongoing research projects related to noise and noise control. Indexed by subject, author/investigator, and publisher/publication/performing organization. Approximately 900 abstracts or summaries in each of the first two issues (October 1971, and April, 1972).

  Cumulative index to be published once a year in July.

  Cost: First two issues distributed free. In future, subscription $8.00 per year.

  Present circulation: 2000+ (for first two issues, distribution list of the Highway Research Board plus selected addressees).

- Transportation Noise Bulletin depends entirely on secondary sources, with the concomitant time lag problems. These secondary sources include: NTIS, Science Information Exchange (SIE), International Aerospace Abstracts and STAR, Engineering Index, and information services attached to the Highway Research Board.

5.2.6 National Industrial Pollution Control Council

Washington, D. C. 20230

Parent organization: U. S. Department of Commerce

The Industrial Council is composed of sub-councils for various areas of industry made up of industry representatives. It has identified the principal pollution control and abatement problems of almost all industry sectors and now prepares progress reports on environmental quality improvements. Although many of the reports touch upon noise pollution as one aspect of the overall problem, only a few reports--including one on leisure product noise and one on gas turbine engines--feature it as the main subject.

- o The organization preforms essentially an information conversion service, synthesizing and summarizing technical information and passing it on, with policy recommendations, to a wider audience.

5.2.7 Noise Repository Information System

Edgewood Arsenal, Maryland 21010

Parent organization: U. S. Army Environmental Hygiene
Agency, Department of the Army

- o Data compilations of the noise characteristics of all weaponry and equipment found on U. S. Army bases, as well as in various stages of research and development. The computerized noise data repository will provide information essential for effective Army hearing conservation programs. Categories of devices for which noise data is being collected are: aircraft, machinery-fabrication, marine craft, machinery-generation, vehicles, and weapons. A fourteen-digit code designed for each category specifies measurement conditions. The first category of device for which data is being inputted into the computer is vehicles. Data on weapons will be next. As of March, 1972, approximately 300 records had been classified and were in the process of being loaded into the computer. It is hoped that the system will hold 3,000 records in the near future.

Criteria for becoming a qualified user of the system, when it becomes fully operational, are not known. Progress on this system has been slower than expected because of technical problems and lack of manpower.

5.2.8 National Referral Center for Science and Technology

10 1st Street, S. E., Washington, D. C. 20540

Parent organization: Library of Congress, Science and Technology Division

Staff of approximately 15, of which 4 in referral section. Set up in 1962 with the aid of an NSF grant. NSF funding discontinued in 1968, resulting in cut-back to ten positions. Now funded by Library of Congress, with staff slowly increasing. Handles 400 requests per month; has handled 23,000 requests since its founding. Data base of 8300 organizations disseminating information, of estimated total of 23,000 in existence.

- Referral services: Only a small percentage of requests are on noise. These are both written and telephone requests. They are handled by sending a standard information sheet giving names, addresses, telephone numbers of 12 organizations which disseminate information on noise. These sheets were made up about a year ago, one for each type of pollutant-- air, water, solid waste, etc. A referral sheet for noise probably would not have been justified by the volume of requests, but it was included in this systematic effort. Some of the information on the "noise" referral sheet is out-dated. On any specific request, the staff first checks the data base of organizations (or in this case, the referral information sheet) and then may augment the response with other, personally-known information resources. Inputs for making up the original information sheets were the data base, followed up by additional research.

- A related referral service is the publication of three directories, one each on physical/engineering, biological, and social sicences. These are computer-printed from the data base. The physical/engineering sciences directory lists 6 entries for organizations concerned with noise reduction and 6 for "noise (sound)." Publication of a fourth directory, on environmental sciences, is contemplated by the Center for 1973.

  Not all the organizations known to disseminate information are included in the directory, because some are not equipped to handle large volumes of information requests.

  Services offered by the Center are free and available to the general public. Because of past funding problems, the Center has been relatively unpublicized. (For example, it has not been able to circulate an exhibit at the various professional meetings.)

5.2.9 National Clearinghouse for Mental Health Information

5454 Wisconsin Avenue, Chevy Chase, Maryland 20015

Parent organization: National Institute of Mental Health

- Literature search and bibliographic: computer searches of data base on mental health materials; machine-printed citations and abstracts. Some translation and processing of foreign materials. Free to public upon request. A small percentage of the data base is related to noise; the papers abstracted are of most use to the medical research community. A broadly designed search on noise and mental health yielded less than 50 citations. Time required to run search and deliver by mail: about one week.

5.3 Publishers

Information on noise is published in a very large number of periodicals covering a wide range of disciplines. For a list of all of these periodicals, see Appendices A and B. Some of the most important publications are described below. Noise/News and Journal of the Acoustical Society of America are discussed elsewhere with their parent organizations.

5.3.1 Acoustical Publications Inc.

27101 E. Oviatt Road, Bay Village, OH 44140

Publishes: Sound and Vibration. 12/year. Average size of issue about 40 pp.

- State-of-the-art information on noise control topics, chiefly in the industrial area but also environmental topics. Semi-technical level of presentation.
- Newsletter -type section contains information on legislative trends; personal data on promotions, etc., of noise-control specialists; business activities of various firms in the noise-control field and short course and conference announcements.
- Referral service gives the reader information on vendors of noise-control hardware, acoustic materials, and on acoustical consultants.

Controlled circulation periodical, "free to egineering, scientific, and other technical personnel who are engaged in noise/vibration/shock control, dynamic measurements, hearing conservation, or dynamic environmental testing in the United States or Canada."

Circulation: 15,700

5.3.2 German Engineers Association (Verein Deutscher Ingenieure)

Graf-Reche-Strasse 84, 4 Dusseldorf 1, West Germany

The Commission on Noise Abatement of the German Engineers Association publishes at the end of its year an annual activity report (Tatigkeits-Bericht or Sachbericht).

It contains detailed data on all the tasks of all the commissions and sub-commissions which occupy themselves with the various aspects of noise control (some extremely technical). The main commissions fall into seven noise categories, such as: 1) industrial noise, 2) traffic noise, 3) residential noise, 4) effects of noise, 5) appreciation of measurement methods, 6) special problems and 7) quieter construction.

All of these are sub-divided into sub-groups involved with research in these various areas. They draft guidelines which quite often result in DIN norms.

5.3.3. Multi-Science Publishing Co., Ltd.

28 Greville Street, London ECIN 8SU, England

Publishes: Noise and Vibration Bulletin. 12/year. Subscription cost: $60, postpaid/airmail.

- This abstracting journal provides state-of-the-art awareness services covering over 1000 periodicals and reports. A typical monthly issue has about 20-30 abstracts from about a dozen primary sources. The abstracts are somewhere between purely indicative and purely informative abstracts in their comprehensiveness. Roughly one third of the abstracts concern vibration and two thirds, noise. The primary sources abstracted range in level from technical-theoretical to applied-technical.
- A separate section reports material from the news media. Most of it is from United Kingdom newpapers or proceedings of Parliament, but the U. S. is heavily covered also.
- A cumulative index is published yearly.
- NVB also performs a foreign information exchange function because its inputs and subscription list is multinational.
- Literature search and bibliographic services: a bibliography of 378 selected papers is available at a cost of $2.50. The papers were published from 1966 to 1969.

NVB takes relatively little processing time to produce its abstracts. Although its coverage is claimed to be worldwide, most of the material is in fact from English-language sources.

5.3.4 Business Publishers, Inc.

Leonard A. Eiserer, Ed. and Publisher, P. O. Box 1067,
Silver Spring, Maryland 20910

Publishes: current awareness newsletter, Noise Control Report. 26/year. Subscription rate: $60 per year.

A new publication (Vol. No. 1: April 17, 1972) that has defined its coverage as "significant developments and issues, including new legislative proposals at Federal, state, and local levels, technical conferences, new products and publications, marketing opportunities, grants and contracts, and enforcement activities," both in the occupational health and general environmental aspects of the field.

5.3.5 J.F. Lehmanns Verlag

Agnes-Bernauer-Platz 8, 800 Munich 21, West Germany

Kampf dem Laerm is published by the German Noise Abatement Socieity on Dusseldorf (Deutscher Arbeitsring fur Laermekaempfung e.v.). It appears 6 times per year. The subscription rate is $10.00 per year (31.50 D.M.). Language: German.

Average size of an issue is about 28 pages.

- Its coverage encompasses various aspects of noise abatement and control, both on a technical and semi-technical level.
- Each issue contains also a newsletter type section giving information in regard to conferences and congresses, both national and international; legislative development; industrial trends and book reviews.

5.3.6 Elsevier Publishing Co. Ltd.

Ripple Road, Barking, Essex, England

Publishes: Applied Acoustics. 4/per year. Subscription cost: $18.85 per year postpaid. Languages: English, with some papers in French or German.

- State-of-the-art-awareness:

  An international journal concerned with the application of acoustical principles to design problems and the materials used in their solution. The preferred style of data presentation is graphs and tables; mathematical derivations are used only when there is no possible alternative. The journal is aimed at engineers, architects, public health inspectors and the occupational hygienist.

- Newsletter function:

  In addition to papers, announcements, reports on conferences, short communications and books reviews are published in Applied Acoustics.

5.3.7 Institute of Sound and Vibration Research
The University, Southampton SO9 5NH, England

Publishes: Journal of Sound and Vibration. 24/year.
Subscription cost: overseas, $181.15 postpaid.

American subscription office: Academic Press Inc.,
111 Fifth Avenue, New York, New York 10003.

This journal is the official medium of publication for the British Acoustical Society. Many of its papers are on a very theoretical level. Only a fraction of the papers concern noise as opposed to other acoustical topics. The editorial board is international in representation and includes members from Canada, the U.S., Austrailia, Czechoslovakia. It is the most expensive of the journals that frequently contain information on noise.

5.3.8 **S. Herzel Verlag**

Stuttgart 1, Berkenwaldstr. 44, Postfach 347, West Germany

Publishes: Acustica. 24/year. Subscription cost: approximately $25.70 (90 DM) plus postage. Languages: English, French, German.

Acustica is an international, multilingual journal. The editorial board includes a Soviet acoustician, as well as representatives of various Western countries. The level of papers published is generally technical. Like other scholarly acoustical journals, only a fraction of papers published relate directly to environmental noise problems.

5.4 City-Level Information Activities

5.4.1 City of Chicago, Department of Environmental Control

320 N. Clark Street, Chicago, IL 60610

By virtue of its early efforts to enact municipal legislation and its recent passage (1971) of a comprehensive noise code, Chicago has become a source of information relatively well known to the user community.

- Publishes: occasional papers on noise control problems such as a noise study of a crosstown expressway at a public school location and the noise climate in the vicinity of a public mall. These are available on request free of charge. Chicago has also published the preliminary study for its 1971 Code. Cost: $15.00.
- Query-and-response service: Chicago has had hundreds of requests for information on its noise abatement program, including over 60 requests from officials in other state and local jurisdictions. It tries to answer these requests as time permits.
- Personal communications: representatives of the Department of Environmental Control have given papers at several conferences, facilitating exchange of state-of-the-art information on city-level legislation and its enforcement.

5.4.2 City of Inglewood, Calif.

105 East Queen Street, Inglewood, CA 90301

The City of Inglewood is located next to the Los Angeles International Airport. Because of its location, it experiences severe exposure to aircraft noise. The Environmental Standards Division of the City of Inglewood publishes reports, circulars, and miscellaneous information sheets. These are sent free upon request. Most of the published material concerns noise from aircraft and airports and the interaction between local governments and the FAA.

As of April 1972, seven reports, three circulars, two single-page information summaries and one draft ordinance were available. Several reports summarize data from Inglewood's noise and monitoring system.

The types of information provided by the City thus include documents, data compilation, litigation and enforcement experience, personal communications and an informal query-and-response service.

5.4.3 Greater London Council, United Kingdom

County Hall, London, S.E. 1, England

In the course of implementing its own urban program to control noise, the Council has become well-known as a source of information.

- Published information includes data compilations (the original London Noise Survey that provided data for the Wilson Report, and follow-up data on traffic noise) and state-of-the-art information contained in irregular periodical, Urban Design Notes.
- As time permits, the Council responds to queries from other English municipalities, the Government, private citizens, and from abroad. This query-and-response and referral service has grown up on an *ad hoc* basis.

5.4.4 City Police Zurich

Noise Abatement Office
Stadtpolizei Zurich
Larmbekampfurgsstelle
Zurich, Switzerland

The Zurich City Police has published a brief annual report (in German) on the yearly activities of its Noise Abatement Office since 1968. It gives a detailed statistical report concerning its transactions and cases investigated in the various noise areas, even including the number of noisy cars confiscated and construction sites refused permission to begin work. Also included are the number of frequency-analyses conducted, conferences held and inquiries answered.

The report also lists the participation of its personnel in national and international conferences. The office itself does considerable research in noise control and measurement techniques and originates many devices for public awareness, for instance, the distribution of free napkins with various noise abatement subjects to restaurants and inns.

5.5 Professional Societies and Trade Organizations

5.5.1 General

The activities of these organizations, including informational activities, are covered in ONAC's NTID300.9, "Noise Programs of Professional/Industrial Organizations, Universities, and Colleges," to which the reader is referred.

Professional societies have made their greatest contributions in the organization of conferences, facilitating personal communications, and in the promulgation of standards. The American National Standards Institute (ANSI) and its relevant committees -- S.1, S.2, S.3, S.4, Z.25, Z.57 -- are most important promulgators of voluntary national standards. ANSI has been criticized in the past for the glacial slowness with which its committees function. However, efforts have recently been made to streamline standards writing procedures. Related to ANSI on the international level is the International Standardization Organization (ISO). ISO recommendations concerning noise are listed in NTID300.6, "An Assessment of Noise Concern in Foreign Nations." Other important professional societies which promulgate standards include the Society of Automotive Engineers (SAE), the American Society of Mechanical Engineers (ASME), the American Society for Testing and Materials Engineers (ASHRAE), and the appropriate sections of the Institute of Electrical and Electronic Engineers (IEEE). Most standards are sold for a price of several dollars apiece. There are so many standards available, however, that the acquisition of a complete set from all sources would require an outlay of hundreds of dollars.

Trade organizations also promulgate standards, but in some cases their informational activities go further. For example, the American Refrigeration Institute (ARI) sells standards for measuring the emissions of air conditioning equipment under ideal test conditions and for predicting the noise levels at property lines in typical installation configurations. But it also runs a labeling scheme for its member manufacturers and publishes noise ratings of their equipment, available to the public. It also provides selective query-and-response services, providing, for example, a critique of the recently proposed City of Baltimore noise code at the request of one of its sponsors.

Detailed information on two key organizations -- Acoustical Society of America and Institute of Noise Control Engineering -- is given below.

5.5.2 Acoustical Society of America

335 East 45th St., New York, NY 10017

A scientific society whose purpose is to increase and diffuse the knowledge of acoustics and promote its practical applications. Membership classes include members, who are persons active in the field with the equivalent of an academic degree, and associates, who need only have an interest in the field. Total membership included 440 fellows, 2464 members, 1280 associates, and 316 students in 1971.

- Publishes: Journal of the Acoustical Society of American (JASA), an archival journal. 12/year. Articles published in section 7 of the journal are directly concerned with noise, and articles in section 4 and other sections are frequently related to noise topics. These articles reflect the state-of-the-art on scientific aspects of noise research, although the selection and editing process is such that there are often delays of up to a year between date of submission and date of publication. In addition to the articles, citations arranged by article classification category comprise a literature search and bibliographic service appearing several times a year. Processing time is such that the citations are often over a year old. Foreign information exchange is reported in the "Acoustical News from Abroad" feature, and a newsletter function is performed by the "Acoustical News--USA" section, both of which appear several times a year. Information on recent acoustical patents, including those related to noise pollution, is also published. Anyone may subscribe to JASA: subscription costs are $48 per year.

- Personal communications are facilitated by ASA sponsorship of two meetings a year. At one recent meeting over 450 papers were presented, of which over 75 were directly related to some aspect of noise.

- (Institute of Noise Control Engineers is an off-shoot of JASA. JASA is sharing sponsorship of publication of INCE's Noise/News and of the INCE INTERNOISE/72 conference, although INCE is assuming full financial responsibility for these ventures by itself.)

- Information functions of two ASA Committees, the Technical Committee on Noise and the Coordinating Committee on Environmental Acoustics, are discussed separately below.

(a) Coordinating Committee on Environmental Acoustics

c/o Richard F. Bolt, chairman, Bolt Beranek
and Newman, 40 Moulton St., Cambridge,
Massachusetts 01773

Parent organization: Acoustical Society of America.

The CCEA was set up in 1971 to make the ASA more effective in contributing to the solution of societal problems involving acoustics, and to coordinate the environment-related activities of the various ASA technical committees. It has set as its initial priority problems related to indoor and outdoor noise environments. Of seven Working Groups originally established, the following Groups are active: Noise and Man, Outdoor Noise Propagation, Motor Vehicle Engine and Tire Noise, Education and Research, and Regional Information. Since most of the work in the CCEA groups is done on a part-time, voluntary basis by busy professionals, sufficient resources were not available to undertake two other Working Groups Projects--Environmental Noise Bibliography and Environmental Noise Lectures--and these groups have been discontinued.

- It is planned that an information conversion service will be performed by the Noise and Man, Outdoor Noise Propagation, and Motor Vehicle Engine and Tire Noise groups, each of which is now reviewing recent technical literature, condensing it, and preparing it for publication on a semi-technical level. Drafts on these three subjects will be completed by the middle of 1972.

- Query-and-response and referral services will be provided by the Regional Information group, which plans to set up groups of ASA members by geographical area who are prepared to serve community, state government, and local government bodies as expert resource persons. The initial focus of this effort reportedly will be in nine urban areas. Regional information services may become operative in some areas this year.

  Questions still being worked out include the form (environmental task forces, scientific advisory councils, or planning study groups), whether ASA members would serve as individuals or as members of their Regional Chapters, the problem of maintaining standards of competence, and the relation of these services to professional engineering and consulting work.

The Working Group on Education and Research is focusing on ways to increase the amount of speciailized manpower available for the solution of environmental noise problems. Its initial conclusions are in the process of preparation.

(b) Technical Committee on Noise

c/o Peter Baade, Chairman; Carrier Corp., Research Div., Syracuse, New York, 13201

Parent organization: Acoustical Society of America

The ASA Technical Committee on Noise reviews papers for publication in JASA, and identifies gaps in the technology of noise control and the state of knowledge on the nature and effects of noise. It tries to remedy these gaps by coordinating the preparation of groups of papers on specific subject areas for presentation at ASA meetings.

- Recent examples of this state-of-the-art approach have been groups of papers on machine noise measurement, sonic boom, compressor noise, etc. Future groups of papers will include community noise, to be presented at the 1972 Miami meeting of ASA, and power plant noise. Other prospective topics include loudness and impulsive noise, and damage risk criteria for cumulative exposure to moderate levels of impulsive noise. Committee members are also supporting paper preparation and selection efforts for the INTERNOISE/72 conference.
- In accordance with its function, much of the Technical Committee's informational activities is carried out by personal communication among relatively small groups of specialists.
- In the past the Chairman of the Technical Committee has operated a referral service, handling all inquiries concerning noise addressed to the Acoustical Society. Because of time limitations, however, the responses to inquiries have generally been in the form of a standard information sheet.

5.5.3 Institute of Noise Control Engineering

Board of Examiners, P. O. Box 4758, CA 94101
Editor, P. O. Box 1758, Poughkeepsie, N.Y. 12601

Works in coordination with Acoustical Society of America. Less than one hundred members. Newly-founded organization. Hopes to build its membership up to several hundred. Membership requirements: experience in noise control engineering and successful completion of certifying examination. Less stringent category of Associate: eligibility not yet established.

- Publishes: Noise/News. 6/year. Current awareness newsletter containing announcements of new publications, meetings, short courses. Cost: $9.00 per year to members, more to libraries and others.

  Topics covered focus on interests of professionals in the field of noise. Also included are commentaries on new standards, legislative trends, book reviews, RFPs and awards of contracts and projects.

  No. 1 Vol. 1 was published in February 1972. Coverage of the above subject areas was incomplete; coverage in issue no. 2 was improved.

- Facilitates personal communications by sponsoring workshops and conferences. Arden House Workshops No. 1 (January 1971) and No. 2 (January 1972), held in Harriman, New York covered measurement techniques, building acoustics, community noise, machine noise reduction, and legislative trends. Registration cost $25.00. Attendence was by invitation. Arden House No. 3 is scheduled for January 1973.

  An International Conference, INTERNOISE/72 is planned for Washington in October, 1972. Attendence will be open to all. Cost: approximately $45.00.

- Planned: a professional journal similar to JASA publishing state-of-the-art papers on noise control engineering. In the very early planning stages; no date of first publication available.

5.5.4 Societies and Associations Interested in Otolaryngology and Speech and Hearing Problems

In general, none of these groups devote a significant portion of their information dissemination efforts to information on noise. Those efforts that are made generally consist of the infrequent publication of an occasional special paper or monograph (e.g. American Speech and Hearing Association, Report No. 4, 1969 on Noise as a Public Health Hazard; American Academy of Opthalmology and Otolaryngology, monograph by A. Glorig on Conservation of Hearing and Noise, 1971). Alternatively, one issue of the monthly or quarterly journal may feature a number of articles on aspects of noise of greatest interest to the organizations readership. (E.g.: NAHSA, the National Association of Hearing and Speech Agencies, devoted the February 1972 issue of its journal to occupational hearing loss aspects of noise.) The technical level of articles depends on the needs, interests, and professional activities of the various organizations and their memberships.

Listed below are some of the organizations in this category.

1) American Academy of Occupational Medicine
University of Michigan Medical Center, Ann Arbor, MI 48104

2) American Academy of Ophtalmology and Otolaryngology, 15 Second St., S.W., Rochester, Minn. 55901

3) American Industrial Hygiene Association
14125 Prevost Ave., Detroit, MI 48227

4) American Laryngological, Rhinological, and Otological Society, Philadelphia, PA 19151

5) American Medical Assoc., Section on Otorhinolaryngology. c/o Dr. Walter H. Maloney, M.D., 2065 Adelbert Rd., Cleveland, OH 44106

6) American Public Health Association
1740 Broadway, New York, N.Y. 10019

7) American Speech and Hearing Association
9030 Old Georgetown Road, Washington, D.C. 20014

8) National Association of the Deaf
915 Bonifant St., Silver Spring, Md. 20910

9) National Association of Hearing and Speech Agencies
919 18th St., N. W., Washington, D. C. 20006

5.6 Private Acoustical Consultants

Acoustical consultants, by the nature of their profession, are the group most intimately involved with information on noise and noise control, both as sources and users, and both on the job and in their voluntary professional activities. They produce almost all types of information products and services for their clients. However, they supply information to the wider user community as well, because they are the original source of many reports published by clients. Particularly significant are reports done for the Federal government that are later available through NTIS or GPO.

Some of the larger acoustical firms such as BB&N, occasionally provide brief referral, literature and bibliographic, and query-and-response services without charge. Technical consultations and extended literature searches are of course provided on a consulting contract basis.

Estimates of the number of individuals and organizations offering acoustical consulting services vary. The definition of an "acoustical consultant" is difficult in the absence of a recognized institution for certification. The Acoustical and Insulating Materials Association (AIMA) lists 86 individuals and firms that have indicated their availability (August 1971).

The National Council of Acoustical Consultants lists 36 as of April 1971 (28 member firms, 8 pending applications). The Institute of Noise Control Engineers has about 60 charter members, several dozen more persons interested in becoming members, and envisages its total possible qualified membership as being limited to several hundred members.

5.7 Academic Centers

Academic centers are listed in NTID 300.9, "Noise Programs of Professional/industrial organizations, universities, and colleges." Many university programs, such as that of the Laboratory of Psychophysics at Harvard, provide consulting services, occasionally free of charge, primarily to sponsors, and to others as time and regulations permit. They also provide an institutional framework for organizing a large percentage of the short courses which are discussed below.

5. 8 Producers of Special Information Products

5.8.1. Short Courses

There are many short courses available to provide mechanical engineers, plant engineers, safety engineers, architects, etc. with background and technical information on noise and noise control. Short course topics include: product noise control, reduction of machinery noise, airport noise trends, human acoustics, instrument calibration, industrial noise control, acoustical materials.

The level of the courses is generally semi-technical, suitable for technically trained persons without special training in acoustics. Courses last from one day to two weeks, but two or three days is typical.

Courses are offered by acoustical consultants (e.g., BB&N), university engineering departments (e.g., Catholic University), adult education and engineering extension branches of universities (e.g., U. of California at Berkeley), ad hoc groups of acousticians (e.g., the courses formerly held each summer at Colby College and now being held in Florida), and by equipment manufacturers (e.g., B&K).

The trend toward short courses was undoubtedly given impetus by the Occupational Safety and Health Act. Many businessmen feel that they need more information to insure that they meet OSHA standards. There is presently no shortage of courses; more than 20 have been announced for the first half of 1972 alone. There is also no licensing or accreditation process to control quality and content of the courses or the qualification of instructors. Courses can be organized by almost anybody--and are.

Fees for the courses include registration, texts, and copies of the course notes, and for longer courses usually some practical work in the laboratory. They range from free (sessions sponsored by one noise-control hardware manufacturer for its customers) to \$400-\$500. Typical fees for a three day course range from \$125 to \$220.

Potential users learn about short courses by direct mail, either because of their prior association with a particular educational institution or because they subscribe to a trade journal that sells its subscription list. The courses are also announced in periodicals like Sound and Vibration and Noise/News, but many potential users do not read these periodicals.

5. 8. 2. Films

ASA'S Technical Committe on Noise has compiled a partial list of 17 films on noise and hearing.

The subject content of those films ranges from audiometry techniques and similar topics (2), for the hearing specialist, to general interest statements of the problem of noise as a pollutant (6). Several of the latter films were produced for the national television networks and their quality is good. Films on hearing conservation (7) are designed for worker education programs. In fact, one such film was used to fill the "down time" of workers waiting to fitted with self-molding ear plugs at a large shipyard.

Those films for which price data is available rent for $8-$35 and sell for $120-$350, although one film was available on free loan.

The films on noise and related topics that have been produced to date do not fulfill the potentialities of the audio-visual media. Their quality varies greatly, and information about their existence is widely dispersed and not readily accessible to the user community.

5.9 Other Information Centers

5.9.1 Institute for Scientific Information

325 Chestnut St., Philadelphia PA 19106

- Literature search services covering over 4000 journals in the life sciences, physical sciences, behavioral, social and management sciences, chemical sciences, education, agricultural, food and veterinary sciences, and technology and engineering. Included are at least nine journals dealing with acoustical topics. One product is the SCI Permuterm index which, with author index, yields citations subject-indexed by permuted two-word combinations taken from article titles. There were over 4000 acoustical noise permuterm entries in the SCI index for the 1970 calendar year, and by 1971 the volume had risen to nearly 6000. The yearly cost of the SCI Index set is in the $500 range.

  Retrospective computer search of the data base by subject, institution, publication, etc. is charged "on a fee basis of $50 for up to two hours, $25 for each additional hour."

- The ASCA IV (Automatic Subject Citation Alert) service yields computer searched and printed citations from material being processed, which are sent weekly to the subscriber. Cost depends on the formulation of the search profile and relative frequency of words used in it, but an inexpensive formulation for acoustical noise would cost over $100 per year.

- Document services are also offered. Original copies of articles from any of the journals covered are sold at a basic charge of $2.50 for up to ten pages plus $2 for each additional ten pages or fraction thereof.

5. 9. 2. Science Information Exchange

Room 300, 1730 M St., NW, Wash., D.C. 20036

Parent organization: Smithsonian Institution

A clearinghouse for information on scientific research planned or in progress, covering all basic and applied fields in the life , social, physical and engineering sciences.

Charges instituted since 1969 range from $40 to $60 for subject searches and $2 for each name searched in an investigator search.

Officially, SIE coverage includes research funded by all Federal Agencies, about 150 major private foundations, many universities, State government programs, some industry, and some foreign information exchange. But because reporting is voluntary, many organizations fail to do so, and actual coverage is far from complete. For example, a search for EPA/ONAC produced only about 37 specific Federally funded projects, and fewer foreign research projects.

5.9.3. Information Center for Hearing, Speech, and Disorders of Human Communication

310 Harriet Lane Home, The Johns Hopkins Medical
Institutions, Baltimore MD 21205.
Partially funded by HEW.

- Publishes Literature search and bibliographic information. Current Citations on Communications Disorders (Vol. 1--1971--) is available to public at nominal cost.
- Over 100 literature searches available on hearing and speech-related topics at $1.00--$1.50 each, of which four concern noise.
- Custom computer searches of the Information Center's data base are available.

Although the services of this center are freely available to the public at nominal cost, only a relatively small percentage of the center's information relates directly to noise.

5.9.4 Voluntary Anti-noise Organization

These groups, mentioned also in NTID300.9, include Citizens against Noise (CAN), Chicago; Citizens for a Quieter City, New York; and National Organization to Insure a Sound Controlled Environment (NOISE). NOISE is an association of cities and towns and other interested individuals whose primary concern is noise near airports. The Chicago and New York groups both distribute public information packets upon request, free of charge, and also operate in an informal query-and-response mode. The New York group is better financed, having received Ford Foundation support for some of its projects. However, as voluntary organizations, the time and material resources of all of these groups are limited.

5.10 Conclusions

1. With the increase in environmental concern in our society, the number and variety of information resources is in a state of flux. The overall number of supply elements is increasing rapidly. However, there is no coordinated system or network of information sources.

2. Of the services that qualify as information centers, most operate in a passive mode--that is, they are designed to respond to requests for services of the information base, or to orders for documents generated by the user's use of a general index. There are two services that do provide SDI (Selective, Dissemination of Information)- type services and one that provides partial SDI:

   a) The internal documentation services of the Library of Congress provide staff members of the Congressional Reference Service with SDI cards bearing citations of new acquisitions. However, only Library of Congress staff members are qualified users, and only one or two staffers are using the system to get citations on noise.

   b) The ISI's ASCA IV system provides weekly custom computer searches on the data base of materials being processed to yield current citations supplied in an SDI mode.

   c) NTIS provides partial SDI (i. e., group profile current awareness) with its FAST announcements and GRTA announcements, although neither have a category exclusively concerned with noise. GRTA comes closest with its "environmental" category.

   The utility of these services is further diminished by the fact that each, although large, covers a very broad range of topics; none is specializing in environmental topics, much less noise on information alone.

3. Many existing information resources are too expensive for individuals, although institutional users may be able to afford them. This includes TNB, if the cost of acquiring many documents from any of the clearinghouses mentioned (except NTIS) is considered. Short courses are another example. Government suppliers are relatively less expensive than private suppliers.

4. Many of the existing information activities are not deliberately structured to be such activities. Instead, they have grown spontaneously as consequence of the the sponsoring organization's main activity. For example: a particular city develops expertise in noise surveys, legislation, and enforcement; it begins to receive inquiries, which it tries to answer within the scope of time and money available. As inquiries grow in volume and begin to fall into categories, some form of standard fact sheets are prepared to cover most frequently asked topics. Referral sheets may also be prepared. The consequence is that the organization inadvertantly becomes an information center, but under such conditions that it can not perform this function thoroughly or systematically, particularly with respect to query-and-response service. Informational services are becoming an operational burden to the cities and other organizations involved.

5. A problem related to No. 4 above is that some existing sources are run on essentially a part-time, volunteer basis. (E.g.: responses by ASA's Technical Committee on Noise or by citizens groups to general inquiries). As the volume of demand increases, these sources either respond more selectively, or answer less comprehensively, or go out of operation altogether.

SECTION 6

INFORMATION SUPPLY AND DEMAND OVERVIEW

We have shown that there is a widespread and very diverse need for noise related information. In Section 5 we attempted to demonstrate that there also exists a wide variety of information products and services.

The problem of this supply and demand presentation is that it does not depict the effectiveness with which the existing supply meets the demand. Since our interviews lead us to believe that the majority of the noise community is not being well served, we conclude that a large segment of the user population is unaware of available information services and products or is unable to use them. Conversely, we observed that some information services are being offered without apparent effort to determine how and whether they are needed or not. In general, the market place of information users and suppliers is not being cleared because they are imperfectly visible to each other.

Our earlier comment on the user's inability to utilize existing products and services merits expansion. Many documents, notably those produced by governmental bodies, are either "restricted" or are circulated in limited numbers. An example for this type of restriction is the OECD's annual survey of traffic noise. Another example of restricted access is proprietary information in the libraries of the major acoustical firms and industrial laboratories.

Some products and services are too costly for the majority of users. For example, the fee for short courses in environmental noise ranges from $200 to $500. This fee is unaffordable by those who cannot obtain institutional support. Another example is the cost of obtaining a minimum collection of relevant information needed by, say, a citizen's group. Since most public libraries do not carry such journals as Noise and Vibration Bulletin, Traffic Noise Bulletin, JASA, Noise Control Report, etc., we estimate that minimum annual outlay of over $250 is required. But even if this cost has been incurred, this citizen's group has no assurance that they, indeed, have acquired the appropriate information.

The following table summarizes the data presented in Sections 3, 4, and 5. Each cell of this matrix contains two elements: (1) Demand, (2) Supply.

The left side of each cell shows the demand by noise subject areas. They are coded and are identified in Section 3.2.2. The right side of each cell shows the supply, also in coded form according to the following schedule:

Symbol	Meaning
A	Exists in adequate quantity to completely satisfy needs
B	Exists to some extent but more would be useful
C	Exists to a neglible degree or not at all; a new product or service should be created

We would like to reiterate that an "A" or "B" rating does not necessarily mean that users' needs are now being satisfied.

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	FEDERAL POLICY, PLANNING & PROGRAM MANAGEMENT	RESEARCH					APPLICATION							IMPLEMENTATION				DISSEMINATION				
		Emission and Suppression	Instrumentation and Measurement	Structural Components	Physiological, Psychological, and Sociological	Legal	Emission and Suppression Eng. and Dev.	Instrumentation and Measurement Eng. & Dev.	Structural Components Eng. and Dev.	Protective Device Eng. and Dev.	Legislation	Standards	Land Use and Urban Planning	Enforcement, Monitoring and Certification	Medicine	Structural Design	Adversary Action	Dissemination of Public Information	Dissemination of Info. for Planners, Public Admin. & Legislators	Education	Labeling	Scientific and Technical Communications
State-of-the-Art Awareness Services	2-3, 11, C	1, 6, 11, B	1, 5-6, 11, B	1-3, 5-6, 11, A	2-3, 6. 11, B	1-6, 8, 11-12, C	1, 6, 11, B	1, 6, 11, A	1, 5-6, 11, B	1-3, 8, 11, A					2-3, 8, 12, C		2-3, C	1-12	1-12	1-12		
Document Services		1, 6, 11, B	6, 11, B	1-3, 5-6, 11, B	2-3, 6, 11, B	1-6, 8-9, 11-12, C	1-4, 11, B	4, 11, B	1-5, 11, B	4, A	1-6, 8-9, 11, C	1-6, 8-9, 11, C	1-7, 9, 11, B	6, 9, C		1-5, 7, 9, 11, B	4, C	1-12	1-12	1-12	2-3	1-12
Program and Budget Services	1-8, 10-11, B	10, B	10, B	10, B	10, B	10, C					8-10, A	8-10, 12, A										1-12
Literature Search and Bibliographic Services	1-4, 6, 7, 11, B	1, 6, 11, B	6, 11, B	1-3, 5-6, 11, B	2-3, 6, 11, B	1-6, 8-9, 11-12, C	1-4, 6, 11, B	1, 4, 11, B	1-5, 11, C	4, C	1-6, 8-9, 11, B	1-6, 8-9, 11, B	1-7, 9, 11, C	6, 9, C		1-5, 7, 9, 11, C	4, C	1-12	1-12	1-12	2-3	1-12
Legislative and Standards Reference Services		8, B	8, B	8, B	8, B	1-6, 8, 11-12, B	8, B	8, B	8, B	8, B	8, 10, B	8, 10, B	8, B	8, B		8, B	8, B				8	1-12
Litigation and Enforcement Retrieval Services	9, C				8-9, C	1-6, 8, 11, 12, B					2-5, 8-9, 12, B	8-9, 12, B	8-9, 12, C	8, C			8-9, C					1-12
Data Compilations	1-7, 11, B	1, 6, 11, B	1, 5-6, 11, B	1-3, 5-6, 11, B	2-3, 6, 11, C	1-6, 9, 11-12, B	2-4, 11, B	1, 6, 11, B	1-6, 11, B	1-3, 8, 11, B	1-3, 5-6, 11, B	1-3, 5-6, B	3, 5-7, 11, B	11, B		1, 5, 11, B	11, B	1-12	1-12	1-12	1-3, 6, 11	
Newsletters	2-4, A	8, B	8, B	8, B	8-9, B	1-6, 8-9, 11-12, B	1, 6, 8, 11, B		1, 5-6, 8, 11, B	1-3, 8, 11, B	2-5, 8-10, 12, A	8-10, 12, B	8, 12, C	12			2-4, 12, B	1-12	1-12	1-12		
Foreign Information Exchange	1-4, 6, 7, 11, B	1, 6, 8, 10-11, B	1, 5-6, 8, 10-11, B	1-3, 5-6, 8, 10, 11, B	2-3, 6, 8, 10-11, B	8, 10, C	1-4, 6, 11, B	1, 4, 6, 11, B	1-6, 11, B	1-4, 8, B	1-6, 8, 11, B	1-6, 8, B	1, 3, 5-7, 9, 11, B	6, 9, C	2-3, 8, 12, B	1-5, 7, 9, 11, B	2-4, B	1-12	1-12	1-12	1-3, 6, 11	1-12
Information Conversion Services	2-4, 10, 12, C					1-6, 8, 11-12, B	1-4, 6, 11, B	1, 4, 6, 11, B.	1-6, 11, B	1-2, 4, 8, B	2-5, 8-10, 12, C	3-5, 8-10, 12, C	1, 3, 5-9, 11-12, B	6, 9, 12, C	2-3, 8, 12, B	1, 4-5, 7, 9, 11, B	2-4, 8, 12, C	1-12	1-12	1-12	1-3, 6, 8, 11	
Personal Communications	12, A	1, 6, 11, A	1, 5-6, 11, A	1-3, 5-6, 11, A	2-3, 6, 11, A	1-6, 8-9, 11-12, A	1-4, 6, 11, B	1, 4, 6, 11, B	1-6, 11, B	1-4, 8, 11, B	2-5, 8-12, B	3-5, 8-12, B	3, 5, 7-8, 12, B	6, 9, 12, B	2-3, 8, 12, C	1-5, 7, 9, 11, B		1-12	1-12	1-12		1-12
Query and Response Services	1-7, 9-11, B										1-6, 8-11, C	1-6, 8, 10, C	1-7, 9, 11, C	6-7, 9, C	2-3, 8, 12, C	1-5, 7, 9, 11, C	2-4, 11, C	1-12	1-12	1-12		1-12
Referral Services		1, 6, 11, B	1, 5-6, 11, B	1-3, 5-6, 11, B	2-3, 6, 11, B	1-6, 8-9, 11-12, B	1, 4, 6, 11, B	1, 6, 11, B	1-6, 11, B	1-3, 8, 11, B	2-5, 8, 12, B	3-5, 8, 12, B	1, 5-6, 8 11-12, B	6, 9, B	2-3, 8, 12, B		2-4, 8, 11-12, C	1-12	1-12	1-12		

SECTION 7

CONCLUSIONS AND RECOMMENDATIONS

7.1 Introduction:

In the preceding sections we have developed a structured approach to the analysis of information requirements and the characteristics of the user community. This was an idealized approach. We then reviewed existing information services from a real world point of view. This Section describes our conclusions in summary form in order to substantiate the recommendations set forth as being operationally meaningful to ONAC. (ONAC's internal information requirements are outside the scope of this report).

7.2 Conclusions:

The noise information community is made up of thousands of members (not counting the public at large). It is apparent that there now exist numerous organizations which generate information products and provide information services related to noise in one form or another. Unfortunately, this information services supply does not meet the demand for a number of reasons. Many information disseminators impede their effectiveness by:

- limiting accessibility through eligibility requirements or by addressing fellow researchers only;
- not announcing selectively the information available;
- charging fees which are too high for some potential users;
- producing information at a technical level which is too sophisticated for many;
- not providing comprehensive coverage of information available;
- delivering untimely, or an overpowering amount of, data;
- supplying only references to, or abstracts of, documents, rather than responses to specific questions;
- delaying responses to queries because of understaffing.

Other reasons include lack of funding, or of knowledge, or understanding of the users' needs.

We would like to emphasize, however, that this long list of shortcomings is not necessarily the result of questionable performance by any organization, but rather because, as of this date, there has been no concerted and well funded effort to comprehensively satisfy all requirements identified earlier. The resultant information gap is an identifiable factor which adversely affects the national problems of noise pollution.

Probably the most important conclusion which can be drawn from this analysis is that the community of actual or potential information users is heterogeneous and requires a variety of products matched to the characteristics of the user. Aside from the few organizations and offices totally dedicated to the topic of noise (such as those at the Federal level), the largest user group, by far, consists of individuals who either have a continuing, but partial, interest need, or who have a one-time, partial interest need. Members of this group directly influence the noise climate and it is they who can change it. They are architects, highway designers, manufacturers of noise producing equipment, state and local government legislators designing new noise ordinances, enforcement officials, airport operators, home builders, etc.

Our review further indicated that there exists a substantial need for noise related information by the public at large. In part, this need is currently latent, but we feel that it should be exploited for the sake of accelerating progress in noise abatement. Further public awareness of the issues and problems involved in noise abatement and control, and the available solutions and their costs, should serve to make noise pollution a public issue and muster popular sentiment and support for noise abatement action at all levels of responsibility.

We believe that the EPA has a major opportunity in filling these needs by:

- linking existing resources;
- consolidating the existing pool of knowledge;
- establishing new information services.

Finally, we would like to reiterate that many organizations, such as city governments, find themselves in the position of being queried at an increasing rate on matters pertaining to noise abatement and control. While these organizations usually have the requisite technical staff, they are not structured as information centers and the task of providing information services is superimposed on their staff's regular tasks. Other groups, notably professional organizations, provide information services on a volunteer labor basis. We believe that if the demand for information continues to increase, these services may have to be restricted, go out of business entirely, or seek supplemental external funding.

7.3 Recommendation:

In view of the uncertainty of appropriations, it is difficult to recommend a discrete program which could be implemented by ONAC. We have, therefore, chosen to enumerate our recommendations in sequence of decreasing perceived priorities so that this list can be translated at the feasibility level.

We fully expect that our report, and especially our recommendations, will be subject to critical review. In this context we would like to note that the order of priorities is likely to change as some experience is gained through implementation.

We recommend that ONAC provide for the following services and products:

1. Comprehensive Data Base

This data base should be assembled in computer readable form, probably utilizing EPA's TIMPS program. Because this data base will be the foundation of all future information products, it should be designed to be as comprehensive as is economically feasible.

First priority should be given to all current information. Eventually, it should be enhanced by selectively extracting information from related data bases.

The data base, optimally, should be truly comprehensive, i.e., it should include scientific data, as well as information on technology, products, practices, laws, codes, standards, and enforcement experience.

2. An Information Analysis Center

Obviously, the data base will have no ~~activity~~ UTILITY unless it is put to work. An information analysis center (following the COSATI definition) should be established. This center must achieve maximum visibility and must establish close rapport with its users and other, related information services.

As an initial minimum capability, this center should be able to provide bibliographic services, query-response services, referral services and publish a periodical aimed at members of the application and implementation groups. This publication should treat technical data in a non-technical language and specifically include actual solutions to practical problems. Other products and services which this center should be able to supply are listed later. The initial services of the center should be provided to the noise community and not to the public at large.

3. Public Awareness

We believe that environmental noise abatement and control should be promoted by an aggressive public awareness program. This program should be aimed at the average citizen as a contributor to noise pollution (e.g., mufflers, radios, lawnmowers) in order to modify his behavior. However, general agitation is not usually constructive. This campaign, therefore, should be carefully aimed at specific issues and/or selected populations only.

After this campaign has been launched, the information center should stand ready to handle queries from the general public.

4. Support to Professional Societies and Associations

Traditionally, professional societies suffer from a lack of funds for their publications and conferences programs. There are many ways in which ONAC could provide relief; for example, institutional membership, publication support, purchasing reprints for free distribution, underwriting national or international conferences, support of standards or codes preparation, etc.

5. Regional Information Support

We have observed that many information needs are regional or local in character. ONAC has the opportunity of providing this kind of support through a network of regional offices from which query-response and a limited degree of consultation services could be made available, especially to city, county and state governments. The comprehensive data base could be made directly accessible at the regional level through the TIMPS network.

Because members of the regional offices will be in direct contact with members of the noise community, a routine report should be established providing data on individuals, organizations, and the kind of information needed. This report should then be made available to the information center for purposes of up-dating their files and improving their services.

6. Other Information Products and Services

This report has identified a host of other information products and services needed. These should be prepared or established at the earliest date feasible. They include:

- A directory of relevant Federal, state and local offices;
- A directory of recognized authorities;
- Current Awareness Service - tailored by group profiles;
- A directory of testing and research facilities;

- Data compilations on a variety of topics such as noise emission of products, sound transmission ratings, etc.;
- A noise thesaurus, to be distributed widely, as an aid in query formulation, etc.

7. Audio/Visual Aids

We have observed that audio-visual aids would satisfy a great segment of the demand for converted information,(i. e., information which has been converted from one technical level to another).

As a minimum, ONAC should create a complete inventory of a/v's in existence and provide for appropriate referral services. We recommend that an analysis be conducted to assess the adequacy of this inventory and that, if needed, additional audio-visuals be prepared.

8. Litigation File

We expect that there will be a growing demand for a complete file on pending and completed noise litigation. As a corollary, this file should also include information on enforcement experience.

9. Foreign Information Exchange

In our work to-date we have learned that very valuable information on noise abatement and control and its related fields is produced by foreign nations. The U. S. would benefit from acquiring this information.

Conversely, a number of multi-national bodies such as the OECD, EEC, WHO, etc., are seeking a way through which world-wide information on environmental noise could be pooled. ONAC has the opportunity of emerging as a world leader by launching a world information center on noise. Undoubtedly, such a center should be supported by the participating nations. However, it is out of scope of this report to explore this matter in further detail.

10. We have identified earlier, specialized suppliers of documents such as NTIS or the GPO. However, these suppliers usually provide services only for federally-supported or technical work. Since there exists a large body of non-copyrighted, non-federal documents, papers and pamphlets which are fairly difficult to obtain, ONAC should seriously consider establishing a supply service. Such document services could conceivably be offered at nominal fees to the user. It is important, that, analogous to the information center, a well publicized one-step service must be established if the flow of information is to be maximized. However, most users identified by this study cannot handle microform documents. Hence, only hard-copy documents should be distributed.

Appendix A

LIST OF PRIMARY PERIODICALS

The following periodicals publish articles or papers on noise abatement and control topics and related subjects. They include scientific, medical, architectural, engineering, environmentalist, trade and general-interest publications, excluding newspapers. The list has been divided into three categories, according to the frequency of relevent articles published in them.

Category I. Frequently contains articles on noise abatement and control topics.

Category II. Occasionally contains articles on noise abatement and control topics.

Category III. Infrequently contains articles on noise abatement and control topics.

Category I--Frequent Articles

ASHRAE Journal (American Society of Heating, Refrigeration & Air Conditioning Engineers)

Acta Otorhinolaryngologica Belgica (Belgium)

Acustica (West Germany)

Aeronautical Journal

Akusticheskiy Zhurnal (Soviet Union)

American Industrial Hygiene Association Journal

Annals of Occupational Hygiene (United Kingdom)

Applied Acoustics (United Kingdom)

Archives of Environmental Health

Archiwum Akustyki (Poland)

Audio Engineering Society Journal

Bruel & Kjaer Technical Review (Denmark)

Building Research Station Digest (United Kingdom)

Environmental Affairs Reporter--Current Developments

Environmental Science and Technology

Gigiena i Sanitariya (Soviet Union)

Gigiena Truda i Professional'nyye Zabolevaniya (Soviet Union)

International Civil Aviation Organization (Canada)

International Audiology (Netherlands)

Journal of Auditory Research

Journal of Sound and Vibration

Journal of Speech & Hearing Research

Journal of the Acoustical Society of America

Kampf dem Laerm (West Germany)

Laermbekaempfung (West Germany)

Machine Design

Municipal Review (United Kingdom)

Nature (United Kingdom)

Noise/News

102 Monitor

Revue Acoustique (France)

Soviet Physics/Acoustics

Category II--Occasional Articles

Acta Biologica et Medica Germanica (West Germany)

Acta Psychologica; European Journal of Psychology (Netherlands)

Acta Physiologica Polonica (Poland)

Activitas Nervosa Superior (Czechoslovakia)

Aerospace Medicine

Air University Review

Aircraft Safety and Operating Problems

Airline Management and Marketing

Akustische Beihefte (West Germany)

American Journal of Diseases of Children

American Society of Civil Engineers. Engineering Mechanics Journal

American Society of Civil Engineers. Proceedings

American Society of Civil Engineers. Structural Mechanics Journal

American Society of Civil Engineers. Transactions

Architectural Record

Archiv fuer Klinische und Experimentelle Ohren-Nasen-und Kehlkopfheilkunde (West Germany)

Audio

Automotive Engineering

Aviation Report Weekly (Japan)

Aviation Week & Space Technology

British Acoustical Society Proceedings (United Kingdom)

British Medical Journal (United Kingdom)

British Standards Institute News (United Kingdom)

Build International (United Kingdom)

Cah. Ent. Sci. et tech Batim. (France)

Clinica Oto-Rino-Laringoiatrica (Italy)

Compressed Air Magazine

Congressional Quarterly Service. Weekly Report

Current Science

Ecology

Electroencephalography and Clinical Neurophysiology (Netherlands)

Engineering News Record

Environmental Control & Safety Management

Environmental Engineering

Ergonomics (United Kingdom)

FAA Aviation News

Foundry

High Speed Ground Transportation Journal

IEEE Transactions. Audio & Electro-acoustics

IEEE Transactions on Bio-Medical Engineering

IEEE Transactions on Power Apparatus

IEEE Transactions on Sonics & Ultrasonics

Indutriell Teknik (Sweden)

Isolation-Revetements (France)

Japanese Journal of Hygiene (Japan)

Journal of Air Law & Commerce

Journal of Air Traffic Control

Journal of Aircraft

Journal of Applied Ecology

Journal of Commerce

Journal of Comparative and Physiological Psychology

Journal of Environmental Sciences

Journal of Mechanisms (United Kingdom)

Journal of Otolaryngol. Jap. (Japan)

Journal of Pediatrics

Journal of the American Industrial Hygiene Association

Kankyo Eisei (Japan)

Kogai (Japan)

Kogai to Taisaku (Japan)

Lancet (United Kingdom)

Lockheed Horizons

Machine Moderne (France)

Materials Research and Standards

Measurement Techniques (Soviet Union)

Medical Tribune

Medical World News

Modern Material Handling

New Pollution Technology

Nippon Koshu Eisei Zasshi (Japan)

Nippon Onlyo Gakkai-shi (Japan)

Nippon Seiri-gaku Zasshi (Japan)

Noise Measurement

Nordisk Hygienisk Tidshrift (Sweden)

Nuisances et Environment (France)

Occupational Safety and Health Services (United Kingdom)

Otolaryngologia Polska (Poland)

Perceptual and Motor Skills (Canada)

Petro-Chemical Engineering

Prakticky Lekar (Czechoslovakia)

Proceedings of the Institute of Electronic Engineers (United Kingdom)

Product Engineering

Saturday Review

Sangyo Kankyo Kogaku (Japan)

Sangyo Kogai (Japan)

Science Digest

Science Journal

Science News

Silence (France)

Sound (England)

Sound Ideas

Soundings

Strassenverkehrstechnik (West Germany)

Technik (West Germany)

Textile Industries

U.S. Airforce Systems Command. Aerospace Medical Research Laboratories

U.S. National Aeronatics & Space Administration. Technical Reports

U.S. Public Health Reports

Verkehrsmedizin und ihre Grenzgebiete (East Germany)

Vrachebnoye Delo (Soviet Union)

Water and Sewage Works

Zeitschrift fuer die Gesamte Hygiene und Ihre Grenzgebiete (West Germany)

Zeitschrift fuer Laryngologie, Rhinologie, Otologie und Ihre Grenzgebiete (West Germany)

Zentralblatt fur Arbeitsmedizin und Arbeitsschutz (West Germany)

Category III--Infrequent Articles

ADM: Revista de la Asociacion Dental Mexicana (Mexico)

AIAA Journal

American Bar Association Journal

American Dyestuff Reporter

American Helicopter Society

American Journal of Mental Deficiency

American Journal of Obstetrics and Gynecology

American Journal of Optometry and Archives of America

American Journal of Physical Medicine

American Journal of Physics

American Journal of Physiology

American Journal of Psychology

American Journal of Public Health and the Nation's Health

American Law Review

American Naturalist

American Psychologist

Anales Espanoles de Odontoestomatologia (Spain)

Annales de Telecommunication (France)

Annals d'Oculistique (France)

Annales d'Oto-Laryngologie et de Chirurgie Cervico-Faciale (France)

Annals of Otology, Rhinology and Laryngology

Annual Review of Fluid Mechanics

Applied Mechanics Reviews

Applied Optics

Applied Physics Letters

Applied Scientific Research Series B: Electrophysics (Netherlands)

Appraisal Journal

Arbeitsphysiologische Hinweise fuer die Werk der Eisen-und Stahlindustrie

APWA Reporter

ASHA Monograph

Academie Des Sciences. Comptes Rendus (France)

Acta Acoustica Sinica (Sheng Hsueh Hsueh Pao)(China)

Acta Biologiae Experimentalis (Poland)

Acta Cardiologica (Belgium)

Acta Chirurgica Academiae Scientarum Hungarica (Hungary)

Acta Neurologica (Italy)

Acta Oto-Laryngologica (Sweden)

Acta Oto-Rhino-Laryngologica Belgica (Belgium)

Acta Paediatrica Scandinavica (Sweden)

Acta Physiologica et Pharmacologica Neerlandica (Netherlands)

Advances in Environmental Science and Technology

Aeromedica Acta (Netherlands)

Aeromedical Reviews

Aeronautical Journal (United Kingdom)

Aeronautical Quarterly (United Kingdom)

Aeronautique et l'Astronautique (France)

Agressologie (France)

Aer et Cosmos (France)

Air Pictorial (United Kingdom)

Aircraft Engineering (United Kingdom)

Airport Services Management

Albany Law Review

Alta Frequenza (Italy)

American Association of Industrial Nurses Journal

American Association of University Women Journal

Archives Belges de Medecine Sociale, Hygiene Medecine du Travail et Medecine Legale (Belgium)

Archives Des Maladies Professionelles (France)

Archives des Maladies Professionelles, de Medecine du Travail et de Securite Sociale (France)

Archives des Sciences Physiologiques (France)

Archives of General Psychiatry

Archives of Otolaryngology

Archives of Physical Medicine & Rehabilitation

Archivio Italiano De Otologia (Italy)

Arch. Techn. Mess. (West Germany)

Archwium Elektrotechniki (Poland)

Arsian M. Med. Lav. (Italy)

Arzeimittel-Forschung (Austria)

Association Francaise de Normalisation (France)

Astronautics and Aerospace Engineering

Audecibel

Automation

Automobiletechnische Zeitschrift (West Germany)

Automotive Industries

Aviatsiya i Kosmonavtika (Soviet Union)

Aviatsionnaya Tekhnika (Soviet Union)

Avtomatika i Vychislitelnaya Tekhnika (Soviet Union)

Avtomatika i Telemekhanika (Soviet Union)

Avtometriya (Soviet Union)

Behavior Today

Behavioural Science

Beitraege zur Gerichtlichen Medizin (Austria)

Bell Laboratories Record

Bell System Technical Journal

Biofizika (Soviet Union)

Byulleten' Eksperimental'noy Biologii i Meditsiny (Soviet Union)

Biuletyn Institutu Medycyny Morskiej (Poland)

Bollettino della Societa Italiana di Biologia Sperimentale (Italy)

Bollettino delle Malattie dell'Orecchio, della Gola, del Naso (Italy)

Bollettino d'Oculistica (Italy)

Brain Research (Netherland)

Bratislavske Lekarske Listy (Czechoslovakia)

British Dental Journal (United Kingdom)

British Journal of Industrial Medicine (United Kingdom)

British Journal of Psychology (United Kingdom)

British Journal of Physiological Optics (United Kingdom)

Brown Boveri Review (Switzerland)

Builder House, The (United Kingdom)

Building Research

Business Week

Bulletin Des Ponts et Chausees et Mines (France)

Bulletin des Societes d'Ophtalmologie de France (France)

Bulletin de la Societe des Amis des Science et des Lettres de Poznan (Poland)

Bulletin of I'Institut National de la Sante et de la Recherche Medicale (France)

Bulletin of the Institute of Marine Medicine in Gdansk (Poland)

Bulletin of ISME (Japan)

Bulletin of the New York Academy of Medicine

California Medicine

Canadian Aeronautics and Space Journal (Canada)

Canadian Banker (Canada)

Canadian Hospital (Canada)

Canadian Journal of Physiology and Pharmacology (Canada)

Canadian Journal of Psychology (Canada)

Canadian Journal of Public Health (Canada)

Canadian Medical Association Journal (Canada)

Ceskoslovenska Hygiena (Czechoslovakia)

Ceskoslovlenska Otolaryngologie (Czechoslovakia)

Ceskoslovenska Pediatrie (Czechoslovakia)

Ceskoslovenska Stomatologie (Czechoslovakia)

Chartered Mechanical Engineer

Chemical Engineering

Chemie-Ingenier Technik (West Germany)

Chemistry and Industry (United Kingdom)

Chien Chu Tsai Liao Kung Yeh (China)

Clin. Lab. (Spain)

Columbia Journal of Law and Social Problems

Columbia Law Review

Commerce Today

Comprehensive Psychiatry

Comptes Rendus des Seances de la Societe de Biologie de Ses Filiales
see Academie des Sciences. Comptes Rendu. (France)

Confinia Neurologica (Switzerland)

Connecticut Medicine

Consulting Engineer

Courrier de La Normalisation (France)

Critical Reviews in Environmental Control

Current Literature in Traffic and Transportation

Current Municipal Problems

Current Papers in Physics (United Kingdom)

Dawe Digest

Dental Digest

Design and Environment

Deutsche Gesundheitswesen (West Germany)

Deutsche Medizinische Wochenschrift (West Germany)

Deutsche Zahnaerztliche Zeitschrift (West Germany)

Deutscher Aerokurier (West Germany)

Doboku Gakkai-shi, Journal of the Japan Society of Civil Engineers (Japan)

Documenta Ophtholmologica (Netherlands)

Ecology Today

Electronic Design

Electronic Equipment News (United Kingdom)

Elektrotechnische Zeitschrift (West Germany)

Energietechnik (East Germany)

Engineering

Environment

Environment and Behavior

Environment and Planning (United Kingdom)

Environment Monthly

Environmental Action Bulletin

Environmental Control Magazine

Environmental Letters

Environmental Research (United Kingdom)

Environmental Science Proceedings, Institute

Environmental Space Sciences

Ergonomics in Machine Design

Esso Air World

Exceptional Children

Experimental Neurology

Experientia (Switzerland)

Eye, Ear, Nose & Throat Monthly

Federation Proceedings

Feingeraetetechnik (East Germany)

Fiziologia Normala si Patologica (Romania)

Fiziologischeskiy Zhurnal SSSR imeni I. M. Sechenova (Soviet Union)

Fiziologichnyy Zhurnal (Soviet Union)

Flight International (United Kingdom)

Flugwelt

Fluidics Quarterly

Folia Histochemica et Cytochemica (Poland)

Folia Medica (Italy)

Folia Choniatrica (Switzerland)

Folia Psychiatrica et Neurologica Japonica (Japan)

Fortune

George Washington Law Review

Gazz. Int. Med. Chir. (Italy)

German Medical Monthly (West Germany)

Giornale di Igiene e Medicina Preventiva (Switzerland)

Glass, Staple, Fiber (Soviet Union)

Gornyy Zhurnal (Soviet Union)

Government Executive

Graefes Archiv fuer Klinische und Experimentelle Ophthalmologie (West Germany)

Growth

Habitat (Canada)

Harvard Journal on Legislation

Harvard Civil Rights/Civil Liberties

Hearing and Speech News

Heating, Piping and Air Conditioning

Hippokrates (West Germany)

Hiradastechnika (Hungary)

HNO:Wegweiser fuer die Facharztlicheiser fuer die Praxis (West Germany)

Hochfrequenztechnik und Elektroakustik (East Germany)

Horticulture

Hospital (Portugal)

Hospital Management

Hospital Topics

Hospitals

Hovering Craft and Hydrofoil

Human Factors

How: Human Heredity (Switzerland)

Humanizm Pracy (Czechoslovakia)

Hutnik (Poland)

Hydrocarbon Processing

Hygiene and Sanitation (Soviet Union)

ISA Journal

Icare (France)

Igiena (Romania)

Igiena Moderna (Italy)

Indian Aviation (India)

Indian Jounal of Medical Research (India)

Indian Journal of Pure and Applied Physics (England)

Industrial Equipment News

Industrial Medicine and Surgery

Industrial Research

Industrie-Anzeiger (West Germany)

Institut du Transport Aerien. Studies.

Institution Municipal Engineers (United Kingdom)

Instruments and Control Systems

Instrum. et Lab. (France)

Instrumentation Technology

Interavia

International Congress of Oto-Rhino-Laryngology. Proceedings.

International Journal of Biometeorology (Netherlands)

International Journal of Environmental Studies (United Kingdom)

Internationale Zeitschrift fuer Angewandte Physiologie Einschliefflich Arbeitsphysiologie (West Germany)

Internationales Archiv Fuer Arbeits-Medizin (West Germany)

Internationales Archiv fuer Gewerbepathologie and Gewerbehygiene (West Germany)

Inzhenerno-Fizicheskiy Zhurnal (Soviet Union)

Iowa Law Review

Iron Age

Izmeritel'naya Tekhnika (Soviet Union)

Izobreteniya, Promyshlennyye Obraztsy, Tovarnyye Znaki (Soviet Union)

Izvestiya Akademii Nauk SSSR: Seriya Biologicheskaya (Soviet Union)

Japanese Journal of Clinical Medicine (Japan)

Jidosha Gijutsu (Japan)

Journal de Mecanique (France)

Journal de Physiologie (France)

Journal des Sciences Medicales de Lille (France)

Journal of Abnormal Psychology

Journal of Applied Psychology

Journal of Applied Social Psychology

Journal of Cellular Physiology

Journal of Chronic Diseases

Journal of Clinical Pathology (United Kingdom)

Journal of Comparative Neurology

Journal of Engineering for Industry

Journal of Engineering for Power

Journal of Engineering Psychology

Journal of Environmental Health

Journal of Experimental Analysis of Behavior

Journal of Experimental Psychology

Journal of Laryngology and Otology (United Kingdom)

Journal of Fluid Mechanics (United Kingdom)

Journal of General Psychology

Journal of Geophysical Research

Journal of Mechanical Engineering Science

Journal of Nervous and Mental Disease

Journal of Neurophysiology

Journal of Occupational Medicine

Journal of Personality and Social Psychology

Journal of Pharmaceutical Sciences

Journal of Projective Technique and Personality Assessment

Journal of Prosthetic Dentistry

Journal of Psychology

Journal of Psychosomatic Research (United Kingdom)

Journal of School Health

Journal of Scientific Industrial Research (India)

Journal of Spacecraft and Rockets

Journal of Speech and Hearing Research

Journal of the Acoustical Society of Japan (Japan)

Journal of the Aeromedical Society of India (India)

Journal of the American Dental Association

Journal of the American Institute of Planners

Journal of the American Medical Association

Journal of the American Osteopathic Association

Journal of the Astronautical Sciences

Journal of the Audio Engineering Society

Journal of the Egyptian Public Health Assoc. (Egypt)

Journal of Engineering Psychology

Journal of the Florida Medical Association

Journal of the Institute of Navigation (United Kingdom)

Journal of the Japan Medical Association (Japan)

Journal of the Neurological Sciences (Netherlands)

Journal of the Optical Society of America

Journal of the Royal College of General Practitioners (United Kingdom)

Journal of the Royal Institute of Public Health and Hygiene (United Kingdom)

Journal of the Royal Society of Engineers (United Kingdom)

Journal of the Society of Motion Picture TV Engineers

Journal of the Urban Royal Planning and Development Division (United Kingdom)

Kardiologiya (Soviet Union)

Kiyev Automaticheskaya Svarka (Soviet Union)

Kikai Gijutsu Kenkyu-sho Shoho (Japan)

Kikai no Kenkyu (Japan)

Klinicheskaya Meditsina (Soviet Union)

Klinika Oczna; Acta Opthalmologica

K'o-Hsueh Ta-Chung (China)

Polonica (Poland)

Kosmicheskaya Biologiya i Meditsina (Soviet Union)

Laboratory Animal Care

Lakartidningen (Sweden)

Language and Speech (United Kingdom)

Laryngoscope

Latviyskiy Matematicheskiy Yezhegodnik (Soviet Union)

Lead

Lekarz Wojskowy (Poland)

Letecky Obzor (Soviet Union)

Letiskivc

Life Sciences (United Kingdom)

Logistics Review

Luft-und Kaeltetechnik (Germany)

Lyon Medical (France)

Machine-Outil Francaise (France)

Machinery and Production Engineering (United Kingdom)

Maryland Law Review

Mashinostroitel' (Soviet Union)

Materials Research and Standards

Materials Science and Engineering

Mechanical Engineering

Medycyna Pracy (Poland)

Medical Journal of Australia (Australia)

Medical Research of Engineering

Medical Service (India)

Medicina del Lavoro (Italy)

Meditsinskaya Gazeta (Soviet Union)

Meditsinskaya Radiologiya (Soviet Union)

Medizinische Klinik (West Germany)

Medizinische Welt (West Germany)

Mekhanizatsiya i Automatozatsiya Upravleniya (Soviet Union)

Mesures Regulation-automatisms (France)

Messtechnik (West Germany)

Metallurgiya (Soviet Union)

Michigan Law Review

Microwaves

Minerva Medica (Italy)

Minnesota Law Review

Minerva Otorinolaringologica (Canada)

Mlody Technik (Poland)

Modern Hospital

Modern Textiles Magazine

Modern Transport

Monatsschrift fuer Kinderheilkunde (West Germany)

Monatsschrift fuer Ohrenheilkunde and Laryngorhinologie (Austria)

Morskoy Flot (Soviet Union)

Mount Sinai Journal of Medicine

Muenchener Medizinische Wochenschrift (West Germany)

Municipal Engineering (United Kingdom)

Naika (Japan)

National Civic Review

National Hearing Aid Journal

National Review

Nations Cities

Natural History

Natural Resources Journal

Naturalist, Quarterly Journal

Nauka i Tekhnika (Soviet Union)

Nauka i Zhizn' (Soviet Union)

Naval Research Review)

Nederlands Tijdschrift voor Geneeskunde (Netherlands)

Neue Huette (Germany)

New Scientist

Heat Management and Pollution Control (Japan)

Neurologia i Neurochirurgia Polska (Poland)

Neuropsychologia (United Kingdom)

New England Journal of Medicine

New York Law Forum

New Zealand Medical Journal

Nippon Jibiinkoka Gakkai Kaiho (Japan)

Nippon Kikai Gakkai-shi (Japan)

Nippon Koku Uchu Gakkai-shi (Japan)

Noise Control and Vibration Reduction

Nordisk Aviation (France)

Nordisk Hygiensisk Tidskrift

Nordrhein-Westfalen Forschungsberichte

Nordisk Medicin (Sweden)

Nuovi Annali d'Igiene i Microbiologia (Italy)

Nursing Research

Nursing Times (United Kingdom)

Occupational Health Review (Canada)

Oeffentliche Gesundheitswesen (West Germany)

Oesterreicheische Ingenieur-Zeitschrift (Austria)

Oil and Gas Journal

Optiko-Mekhanicheskaya Promyshlennost' (Soviet Union)

Orvosi Hetilap (Hungary)

Otolaryngology (Japan)

Otorhinolaringologia Italiana (Italy)

Pediatriya (Soviet Union)

Pediatriya Akusherstvo i Ginekologiya (Soviet Union)

Pennsylvania Game News

Perception and Psychophysics

Pfluegers Archiv; European Journal of Physiology (West Germany)

Physica

Physical Review Letters

Physics Bulletin (United Kingdom)

Physiologia Bohemoslavaca (Czechoslovakia)

Physiology and Behavior (United Kingdom)

Plant Engineering

Plasticheskiye Massy (Soviet Union)

Plastics Technology

Point to Point Telecommunications

Polish Medical Journal (Poland)

Pollution Engineering Magazine

Polski Tygodnik Lekarski (Poland)

Popular Government

Popular Science

Postgraduate Medicine

Prace Centralnego Institutu Ochrony (Poland)

Practica Oto-Rhino-Laryngologica (Switzerland)

Practitioner (United Kingdom)

Practitioner Suppl. (United Kingdom)

Praxis (Switzerland)

Praxis-Schweizerische Rundschau Fuer Medizin (Switzerland)

Presse Medicale (France)

Presse Thermale et Climatique (France)

Pribory i Sistemy Upravleniya (Soviet Union)

Pribory I Tekhnika Eksperimenta (Soviet Union)

Proceedings of the Mine Medical Officers Association (South Africa)

Proceedings of the National Academy of Sciences of the U. S. A.

Proceedings of the Royal Society of Medicine (United Kingdom)

Proceedings of the Society for Experimental Biology and Medicine

Promyshlennost' Belorussii (Soviet Union)

Przeglad Lekarski (Poland)

Psychiatrie, Neurologie und Medizinische Psychologie (Germany)

Psychological Reports (Canada)

Psychologische Forschung (West Germany)

Psychonomic Science

Psychopharmacologia (West Germany)

Psychophysiology

Public Health Reports

Public Works

Quarterly Journal of Experimental Psychology (United Kingdom)

Rassegna Internazionale di Stomatologica Pratica (Italy)

Rechnoy Transport (Soviet Union)

Resenha Clinico-Cientifica (Brazil)

Resources

Review of Scientific Instruments

Revista de Psihologie (Romania)

Revue de Medicine Psychosomatique et de Psychologie Medicale (France)

Revue des Corps Sante Armees, Terre, Mer, Air (France)

Revue Generale de L'air et de L'espace (France)

Revue Medicale de la Suisse Romande (Switzerland)

Rhode Island Medical Journal

Rivista Aeronautica. Supplemento Technico (Italy)

Rivista Italiana d'Igiene (Italy)

Rivista di Medicina Aeronautica e Spaziale (Italy)

Rivista Oto-Neuro-Oftelmologica (Italy)

Rivista Transporturilor (Romania)

Rocky Mountain Medical Journal

Rodo Kagaku (Japan)

Royal Aeronautical Society (United Kingdom)

Royal Society of Health Journal (United Kingdom)

Rozprawy Wydzialu Nauk Medycznych (Poland)

Russian Engineering Journal (London)

SAE Journal

Samoletostroyeniye i Tekhnika Vozdushnogo Flota (Soviet Union)

Sangyo Igaku (Japan)

Sbornik Vedeckych Praci Lekarske Fakulty Karlovy University (Czechoslovakia)

Scandinavian Journal of Psychology (Sweden)

Schiffbautechnik (Germany)

Schweisstechnik (East Germany)

Science

Science Journal

Science News

Science and Engineering Newsletter of the Novosti Press Agency (Soviet Union)

Science and Technology

Scientific American

Scientists and Citizen Magazine

Sdelovaci Tekhnika (Czechoslovakia)

Sierra Club, Bulletin

Slaboproudy Obzor (Czechoslovakia)

Socialmed (Sweden)

Society of Safety Engineers Journal

South African Medical Journal (South Africa)

Sound Engineering Magazine

Southern California Law Review

Space Aeronautics

Spectrum

Sperry Rand Engineering Review

Srpski Archiv za Celokupno Lekarstvo (Yugoslavia)

Stomatologiya (Soviet Union)

Studii si Cercetari de Endocrinologie (Romania)

Stadium Generale (West Germany)

Stanford Law Review

Sudostroyeniye (Soviet Union)

Sudostroyeniye i Morskiye Sooruzheniya (Soviet Union)

Svensk Farmaceutisk Tidskrift (Sweden)

Svensk Lakartidn (Sweden)

T. Soc. Geneesk (Netherlands)

Technica (East Germany)

Technika Lotnicza Astronautyczna (Poland)

Tekhnologiya i Organizatsiya Proizvodstva (Soviet Union)

Tekstil'naya Promyshlennost' (Soviet Union)

Test Engineering and Management

Therapeutic Notes

Therapeutique (France)

Therapie der Gegenwart (West Germany)

Tien Tzu Chi Shu (China)

Time

Today's Health

Traffic Engineering

Traffic Engineering and Control (United Kingdom)

Transactions of the Association of Industrial Medical Officers

Transactions of the American Academy of Ophthalmology and Otolaryngology

Transactions of the New York Academy of Sciences

Transactions of the Society of Occupational Medicine (United Kingdom)

Translations of Bettstone Institute

Transporation Research (United Kingdom)

Transportation Science

Trial

Trudy Leningradskogo Sanitarnogigienicheskogo Meditsinskogo Instituta (Soviet Union)

Two Thousand (France)

U.S. News

University of Cincinnati Law Review

University of Miami Law Review

University of Toronto Law Review (Canada)

Ugeskrift for Laeger (Denmark)

Ukrains'kyy Biokhimichnyy Zhurnal (Soviet Union)

Urban Studies (United Kingdom)

Valsalva: Rivista Bimestrale di Oto-Rhino-Laringologie (Italy)

Verkehrsmedizin und Ihre Grezgebiete (East Germany)

Vertical World

Vertiflight

Vestnik Otorinolaringologii (Soviet Union)

Vestnik Mashinostroyeniya (Soviet Union)

Veterinariya (Soviet Union)

Vibration and Noise Control in Industry (Soviet Union)

Vision Research (United Kingdom)

Vojeske Zdravotnicke Listy (Czechoslovakia)

Voyenno Meditsinskiy Zhurnal (Soviet Union)

Vojnosanitetski Pregled (Yugoslavia)

Volta Review

Voprosy Onkologii (Soviet Union)

Vopnosy Pitaniya (Soviet Union)

Vrachebnoye Delo (Soviet Union)

Weld der Fabrikation (Germany)

Wiener Klinische Wochenschrift (Austria)

World Aerospace Systems (United Kingdom)

World Health Organization Chronicle (Switzerland)

World Health Organization Public Health Papers (Switzerland)

World Medicine

Wu Hsien Tien Chi Shu (China)

Wu Li Hsueh Pao (China)

Yonsei Medical Journal (S. Korea)

Zdorov'ye (Soviet Union)

Zdravookhraneniye Belorusii (Soviet Union)

Zeitschrift fuer Angewandte Physiologie

Zeitschrift fuer Aerztliche Fortbildung (East Germany)

Zeitschrift fuer Experimentelle und Angewandte Psych. (West Germany)

Zeitschrift fuer Flugwissenschaften (West Germany)

Zeitschrift fuer Kinderheilkunde (West Germany)

Zeitschrift fuer Luftrecht und Weltraumrechtsfragen (West Germany)

Zeitschrift fuer Mikroskopisch-Anatomische Forschung (West Germany)

Zentralblatt fur Bakteriologie, Parasitenkunde, Infektionskrankheiten und Hygiene; Erste Abteilung; Originale (West Germany)

Zhurnal Nevropatologii (Soviet Union)

Zhurnal Nevropatologii i Psikhiatrii imeni S.S. Korsakova (Soviet Union)

Zhurnal Prikladnoy Spektroskopii (Soviet Union)

Zhurnal Uzhnykh, Nosovykh i Gorlovykh Bolezney (Soviet Union)

Zhurnal Vysshey Nervnoy Deyatel'nosti (Soviet Union)

Zurlo N. Med. Lav. (Italy)

Zpravodaj Vzlu (Czechoslovakia)

Zvukopogloshchayushchiye i Zvukoizolyatsionnyye Materialy (Soviet Union)

Appendix B

LIST OF SECONDARY PERIODICALS

The following abstracting and indexing periodicals contain information on articles or papers on noise abatement and control topics and related subjects.

Abstracts in Ergonomics

Acoustics Abstracts

Aerospace Medicine and Biology

Applied Science and Technology

Bibliography of Medical Reviews

Biological Abstracts

Business Periodicals Index

Current Citations on Communication Disorders

Current Contents - Life Sciences

dsh Abstracts

Excerpta Medica (Netherlands)

Engineering Index

Environment Information Access

Government Research Abstracts

Government Research Index

Human Communication and Its Disorders

Hungarian Technical Abstracts

Index Medicus

Index to Legal Periodicals

Appendix B (Cont'd)

Noise and Vibration Bulletin (United Kingdom)

PAIS Bulletin

Pandex Current Index to Science and Technology Literature

Permuterm Index [ISI]

Pollution Abstracts

Referativnyy Zhurnal. Air Transport (Soviet Union)

Referativnyy Zhurnal. Fizika (Soviet Union)

Referativnyy Zhurnal. Meteorologiya i Izmeritel'naya Fizika (Soviet Union)

Referativnyy Zhurnal. Radiofizika (Soviet Union)

References to Contemporary Papers on Acoustics (in JASA)

Science Citation Index [ISI]

Transportation Noise Bulletin

Urban Affairs Abstracts

Verticle File Review

West's Case Histories